03-19-04

AF/2821
#
IFW

PTO/SB/21 (04-04)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	09/779,076
Filing Date	February 7, 2001
First Named Inventor	ROCHELLE, et al.
Art Unit	2821
Examiner Name	Michael C. Wimer
Total Number of Pages in This Submission: 306	Attorney Docket Number: 26053.00

ENCLOSURES ***(check all that apply)***

- ☒ Fee Transmittal Form
  - ☒ Fee Attached
- ☐ Amendment / Reply
- ☐ After Final
- ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
  - ☐ Certified Copy of Priority Document(s)
  - ☐ Response to Missing Parts/ Incomplete Application
    - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) _____
- ☐ After Allowance Communication to Technology Center (TC)
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☒ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) *(please identify below)*: **Return Receipt Postcard**

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Thomas A. Kulaga
Signature	Thomas A Kulaga
Date	8-18-04

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name	Express Mail Number: EV 431723407 US		
Signature		Date	

PTO/SB/17 (10-03)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☒ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 165

Complete if Known	
Application Number	09/779,076
Filing Date	02/07/2001
First Named Inventor	ROCHELLE, et al.
Examiner Name	Michael C. Wimer
Art Unit	2821
Attorney Docket No.	26053.00

METHOD OF PAYMENT *(check all that apply)*

☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account:

Deposit Account Number: 16-1910 (26053.00)

Deposit Account Name: Pitts & Brittian, P.C.

The Director is authorized to: *(check all that apply)*
☐ Charge fee(s) indicated below ☐ Credit any overpayments
☒ Charge any additional fee(s) during the pendency of this application
☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below		Fee Paid
Total Claims		-20**	=	X		=	
Independent Claims		- 3**	=	X		=	
Multiple Dependent				X		=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

**or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	165
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive – unavoidable	
1453	1,330	2453	665	Petition to revive – unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17 (q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	
				Other fee (specify) ____	

*Reduced by Basic Filing Fee Paid **SUBTOTAL (3)** ($) 165

SUBMITTED BY				Complete *(if applicable)*	
Name (Print/Type)	Thomas A. Kulaga	*Registration No. (Attorney/Agent)*	46,844	*Telephone*	865-584-0105
Signature	Thomas A Kulaga			*Date*	8-18-04

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial Number:	09/779,076
Filing Date:	02/07/2001
Confirmation:	7830
Applicant:	James M. Rochelle, et al.
Title:	Wireless boundary proximity determining and animal containment system and method
Docket Number:	26053.00
Examiner:	Michael C. Wimer
Art Unit:	2821
Customer Number:	22465
Express Mail Number:	EV 431723407 US

APPELLANTS' BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 C.F.R. §1.192(a), this Appellants' Brief is filed on behalf of Applicants in the above-referenced patent application.

Table of Contents

I. Real Party in Interest

This appeal is taken in behalf of Concorde Microsystems, Incorporated, of 10427 Cogdill Road, Suite 500, Knoxville, Tennessee, 37932. Concorde Microsystems, Inc. is the owner of record of the Application, as indicated one Reel 011823, Frame 0596-0603. All of the inventors have assigned their rights, which has been duly recorded, to Concorde Microsystems, Inc.

Within the past two months, Concorde Microsystems, Inc., has undergone a reorganization in which the name, Concorde Microsystems, Inc., has been changed to CMS Partners, Inc. The name change has not yet been recorded with the Patent and Trademark Office. Accordingly, the real party in interest is CMS Partners, Inc.

II. Related Appeals and Interferences

There are no other appeals or interferences known by Appellants or Appellants' legal representative that will directly affect, be directly affected by, or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

Claims 4-13, 16-23, and 28-30 are presently pending in the Application. Claims 28, 29, and 30 are independent claims. Claims 1 and 3 have been cancelled and re-presented as independent Claim 29. Claims 1 and 14 have been cancelled and re-presented as independent Claim 30. Claims 4 to 13 depend, either directly or indirectly, from Claim 29. Claims 16 to 21 and 23 depend, either directly or indirectly, from Claim 30. Claim 22 is currently orphaned by the cancellation of Claim 2, a fact caught by neither Applicants nor the Examiner. For purposes of this Appeal Brief, Claim 22 shall be treated as depending from Claim 30 until a proper amendment of the dependency of Claim 22 can be made. For reference, a statement as to the status of each Claim prosecuted in the present application is presented:

Claim 1 ..... Cancelled
Claim 2 ..... Cancelled
Claim 3 ..... Cancelled

Claim 4 ..... Rejected 103(a)
Claim 5 ..... Rejected 103(a)
Claim 6 ..... Rejected 103(a)
Claim 7 ..... Rejected 103(a)
Claim 8 ..... Rejected 103(a)
Claim 9 ..... Rejected 103(a)
Claim 10 ..... Rejected 103(a)
Claim 11 ..... Rejected 103(a)
Claim 12 ..... Rejected 103(a)
Claim 13 ..... Rejected 103(a)
Claim 14 ..... Cancelled
Claim 15 ..... Cancelled
Claim 16 ..... Rejected 103(a)
Claim 17 ..... Rejected 103(a)
Claim 18 ..... Rejected 103(a)
Claim 19 ..... Rejected 103(a)
Claim 20 ..... Rejected 103(a)
Claim 21 ..... Rejected 103(a)
Claim 22 ..... Rejected 103(a)
Claim 23 ..... Rejected 103(a)
Claim 24 ..... Cancelled
Claim 25 ..... Cancelled
Claim 26 ..... Cancelled
Claim 27 ..... Cancelled
Claim 28 ..... Rejected 103(a)
Claim 29 ..... Rejected 103(a)
Claim 30 ..... Rejected 103(a)

A copy of Claims 4-13, 16-23, and 28-30, as presently before the United States Patent and Trademark Office, is set forth in Appendix A.

IV. Status of Amendments

There have been no amendments entered in the Application on Appeal subsequent to the Final Office Action mailed on April 20, 2004.

V. History of the Prosecution

The present Application was filed on February 7, 2001, and claims priority to a non-provisional application filed on February 8, 2000. The PTO sent a Notice to File Missing Parts and the Applicants responded appropriately.

The first Office Action mailed on July 29, 2002, required an election of claims. Paper No. 7. Applicants responded by canceling Claims 24-27.

A first Non-Final Office Action was mailed on October 4, 2002, and rejected all pending claims, which included Claims 1-23 and 28. Paper No. 9. Applicants, in their Response, amended Claims 20, 22, and 28; amended the Specification to correct typographical and grammatical errors; and amended Figures 10c and 10d to correct typographical errors.

A first Final Office Action was mailed on July 28, 2003, and rejected all pending claims, which included Claims 1-23 and 28. Paper No. 13. Applicants, in their Response, amended Claims 4, 12, and 16; added Claims 29 and 30, which re-presented dependent Claims 3 and 14, respectively; cancelled Claims 1, 2, 3, 14, and 15, without prejudice; and provided a Declaration establishing facts refuting the Examiner's obviousness rejection. Applicants also filed a Notice of Appeal.

A second Non-Final Office Action was mailed on November 5, 2003, in which the Examiner states that Applicants' Declaration was sufficient to overcome the existing rejections, which were based on Stewart. Specifically, the Examiner stated that the "declaration under 37 CFR 1.132 filed 29 September 2003 is sufficient to overcome the rejection of claims 1-28 based upon Stewart et al. The arguments in the remarks is [sic] persuasive and, therefore, the finality of the previous Office action is withdrawn. Newly discovered reference to Avenel et al. (6407677 B1) is cited in this Office action." Paper No. 17, para. 1. Applicants responded by pointing out that the new reference was not applicable to all claims and by arguing that the Examiner has not shown a *prima facie* case of obviousness.

A second Final Office Action was mailed on April 4, 2004. Applicants responded by filing a Notice of Appeal on June 18, 2004. The instant Brief is in support of this Appeal.

VI. Summary of Invention

The invention detailed in the Claims of the present Application is an apparatus for proximity monitoring by generating and sensing an electromagnetic field defining a wireless boundary. More specifically, this invention relates to an apparatus for determining the proximity of a receiver to an electromagnetic field boundary generated by a wireless transmitter, especially for animal containment. *Paper No. 1*, pg. 1, lines 16-20.

A transmitter **10** broadcasts, or transmits, a composite time-varying magnetic field **12** that is sensed by a receiver **11**, such as one that can be worn by an animal or pet **39**. *Paper No. 1*, pg. 15, lines 15-18; Fig. 1. The receiver **11** receives and processes the composite time-varying magnetic field **12** incident upon the receiver's antenna **21**. *Paper No. 1*, pg. 15, lines 20-22; at 17, lines 4-7; Figs. 1 and 2. The measure of the power of the received magnetic field **12** is used to determine the proximity of the transmitter **10** in relation to the receiver **11**. *Paper No. 1*, pg. 15, lines 22-23; Fig. 1. In one embodiment, when the distance between the transmitter **10** and the receiver **11** reaches a predetermined distance **20**, a deterrent stimulus is applied to the pet **39**. *Paper No. 1*, pg. 15, lines 23-26; Figs. 1 and 2.

The transmitter **10**, in one embodiment, includes a carrier signal generator **15**, which produces three separately identifiable carrier signals **50**, **51**, and **52**, and a 3-axis antenna array **13**. *Paper No. 1*, pg. 18, lines 19-25; Fig. 3a. The carrier signal generator **15** includes a carrier frequency synthesizer **17**, a clock generator **16**, a modulation signal generator **18**, and at least one signal modulator **19**. *Paper No. 1*, pg. 16, lines 3-7; Fig. 3a. In the signal modulator **19**, the three signals from the modulation signal generator **18** are combined with the signal from the carrier frequency synthesizer **17** to produce three separately identifiable carrier signals **50**, **51**, and **52** that are binary phase-shift keying (BPSK) modulated. *Paper No. 1*, pg. 16, line 3, to 17, line 3; Fig. 3a. The antenna array **13** includes a geometrically orthogonal set of three separate antenna elements **43**, **44**, **45**, with each element transmitting one of the modulated carrier signals **50**, **51**, and **52**. *Paper No. 1*, pg. 18, lines 24-32; Figs. 3a and 4.

The receiver **11**, in one embodiment, includes a sensing antenna array **21** feeding an antenna signal amplifier **23**. *Paper No. 1*, pg. 17, lines 4-12; Fig. 2. The receiver **11** also includes a receiver clock generator **24** for producing local oscillator (LO) signals, at least one down conversion circuit **25** for recovering the baseband composite modulation components of the received signal, and filtering and amplifier circuits **38** for amplification and final filtering of the baseband signal. *Paper No. 1*, pg. 17, lines 4-16; Fig. 2. An analog-to-digital converter (ADC) **27** digitizes the baseband signals, which are processed by a digital signal processor (DSP) **33** acting in concert with a sampling clock generator **34** to digitally process data streams **30**, **31** for the purpose of extracting and computing an accurate digital measure of the average power of the incident magnetic field **12**. *Paper No. 1*, pg. 17, lines 17-28; Fig. 2. A proximity detector **35** is connected to a signaling device activation logic circuit **36** that responds to the proximity detector **35** and produces signals as required to drive a signaling device **37**, which generates a signal when the receiver **11** moves across the preselected wireless boundary. *Paper No. 1*, pg. 17, line 30, to 18, line 10; Fig. 2.

In one embodiment, the receiver **11** also includes a baseline crossing detector **29** monitoring the baseband signal and producing a countable pulse for each instance of the baseline crossing of the respective baseband signal. *Paper No. 1*, pg. 17, lines 19-23; Fig. 2.

One embodiment for the receiver **11** includes a digital CMOS integrated circuit **32** for digital data acquisition and processing **300**, a correlation filter **302** for extracting magnetic field component measures **382**, **384** and **386** from the I and Q data samples using correlation sequences, an arithmetic logic unit (ALU) **304** to digitally compute magnetic field component power and total power measures, and a data-based correlator phase locking logic **316**. *Paper No. 1*, pg. 32, line 1, to 34, line 32; Fig. 10a. The ALU **304** digitally sums the first, second and third power measures **382**, **384** and **386** to obtain a digital measure, R, **381** of the total magnetic field power incident on the receiver module **11**. *Paper No. 1*, pg. 35, lines 8-30; at 37, lines 15-18; Figs. 10a, 10c.

The total power measure **381** is independent of the orientation of the receiver's sensing antenna array **21** and is representative of the total magnetic field signal power

incident on the receiver **11**. *Paper No. 1*, pg. 32, lines 1-9; pg. 35, lines 8-13; Figs. 10a, 10c. It is noted that the boundary of the composite magnetic field **12** is "defined by the locus of all points on a path surrounding the transmitter 10 for which the total power in the composite magnetic field is a constant." *Paper No. 1*, pg. 19, lines 30-32; Fig. 1.

VII. Issues

A. Whether the Examiner established a *prima facie* case of obviousness with respect to Claims 4-13, 16-23, and 28-30 rejected under 35 U.S.C. § 103(a) as being unpatentable over Stewart (Patent Number 6,392,547) in view of Avenel (Patent Number 6,407,677).

B. Whether the Examiner's unsupported statements of obviousness based on common knowledge and opinion are sufficient to reject the claims as obvious.

VIII. Grouping of Claims

With respect to the first issue, Claims 4-13, 16-23, and 28-30 are believed to be separately patentable and do not stand or fall together. An explanation of the reasons that Claims 4-13, 16-23, and 28-30 are believed to be separately patentable is set forth in the Argument section.

With respect to the second issue, the Examiner made conclusory assertions of obviousness for various groups of claims. Each of these groups of claims are believed to stand or fall together with respect to the second issue.

IX. Argument

At the outset, Appellants apologize for the length of the arguments presented herein. The conclusory assertions of the Examiner and the Examiner's omnibus rejections necessitates the in-depth analysis of each claim and ground for rejection. In Appellants first issue, Appellants intend to address the substantive portion of the Examiner's rejections. That is, Appellants intend to show that each claim is not obvious under 35 U.S.C. § 103(a). In Appellants second issue, Appellants intend to address the validity of the Examiner's rejections with respect to the Examiner's conclusory assertions of obviousness and lack of support of such statements in the record.

A. Whether the Examiner established a *prima facie* case of obviousness with respect to Claims 4-13, 16-23, and 28-30 rejected under 35 U.S.C. § 103(a) as being unpatentable over Stewart (Patent Number 6,392,547) in view of Avenel (Patent Number 6,407,677).

1. The Law of Obviousness

Claims 4-13, 16-23, and 28-30 in the present application are not rendered obvious by Stewart in view of Avenel and are not properly rejected under 35 U.S.C. §103(a), which reads:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

35 U.S.C. §103(a) (2004).

A rejection under 35 U.S.C. § 103(a) must be supported by a *prima facie* case of obviousness. MPEP § 2142. Section 2143 of the Manual of Patent Examining Procedure summarizes the standards for a *prima facie* case of obviousness under 35 U.S.C. §103. The first element is that "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings."

MPEP § 2143. The second element is that "there must be a reasonable expectation of success." *Id.* The third element is that "the prior art reference (or references when combined) must teach or suggest all the claim limitations." *Id.* The expectation of success and the motivation to combine the references "must both be found in the prior art, not in the applicants disclosure." *In re Vaeck*, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper); *see* MPEP § 2143.01. "Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability--the essence of hindsight." *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999).

The standard of review applied to findings of fact is the "substantial evidence" standard under the Administrative Procedure Act (APA). *See In re Gartside*, 203 F.3d 1305,1315,53 U.S.P.Q.2d 1769,1775 (Fed. Cir. 2000); *see also* MPEP 2144.03, pg. 2100-136, 8th ed., rev. 2. There must be some form of evidence in the record to support an assertion of common knowledge. *See In re Lee*, 277 F.3d 1338, 1344-45, 61 U.S.P.Q.2d 1430, 1434-35 (Fed. Cir. 2002); *In re Zurko*, 258 F.3d 1379, 1386, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001); *see also* MPEP 2144.03, pg. 2100-137, 8th ed., rev. 2. "With respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or experience -- or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings." *In re Zurko*, 258 F.3d 1379, 1386, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001).

The United States Supreme Court has held that the relevant facts for finding obviousness relate to (1) the scope and content of the prior art, (2) the level of ordinary

skill in the field of the invention, (3) the differences between the claimed invention and the prior art, and (4) any objective evidence of nonobviousness such as long felt need, commercial success, the failure of others, or copying. *Graham v. John Deere Co.* 148 U.S.P.Q. 459, 467 (U.S. 1966). The *Graham* Court stated that "the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved." *Id.* at 467. The *Graham* court further stated that "[s]uch secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy." *Id.*

2. Patent 6,392,547: Stewart

United States Patent Number 6,392,547, titled "Proximity monitoring system and associated methods," issued to Stewart, et al., on May 21, 2002, is cited by the Examiner to support his assertion of obviousness. In general, Stewart discloses a base station **21** that transmits a rotating magnetic field to a tag device **25**, which sends a return radio frequency (RF) signal to an RF receiver **43**, **43'** in the base station **21** indicating that the tag **25** has crossed a boundary. Stewart, Col. 4, lines 26-29, Figs. 3, 4, 5, and 6.

Stewart discloses a base station **21** having two orthogonal coils, or antennas, **32**, **33** and a tag, or receiver, **25** having three orthogonal coils **53**, **54**, **55** connected together. Stewart, Col. 3, lines 64-65; Col. 4, lines 50-57; Figs. 3, 4. Stewart does not teach or disclose the use of three transmitting antennas at the base station. Stewart discloses that a

> base station **21** may include a housing **30**, a printed circuit board **31** within the housing and a pair of wire coils **32**, **33** carried by the housing. The base station **21** illustratively includes rotating magnetic field generating circuitry **35** on the circuit board **31**. This circuitry **35** may include a driver **41** for driving the wire coils **32**, **33** at a desired power level and frequency. The driver **40** may energize the coils **32**, **33** at a frequency, such as in a range of about 60 KHz to 400 Khz. In addition, the size of the coils **32**, **33** may be sufficiently small relative to the wavelength so that the rotating magnetic field is generated while substantially no electric field is generated. For example, the coils **32**, **33** can

have a diameter of less than about one foot. Other coil sizes and operating frequencies are also contemplated by the present invention.

Stewart, Col. 3, line 59 to Col. 4, line 6; *see also* Figs. 2 & 3.

Stewart explicitly discloses the use of a rotating magnetic field as created by the rotating magnetic field generating circuitry **35**. Stewart, Col. 3, lines 62-64; *see also* Col. 4, lines 7-11. Rotating magnetic fields are produced by applying signals to two coils with the signals out of phase by the same amount that the coils are aligned about a common axis formed by the intersection of the planes of the coils. *See* Stewart, Figs. 2 & 3. In other words, two orthogonal coils will generate a rotating magnetic field when a second coil is excited with an alternating current that is 90 degrees out of phase with the current applied to the first coil. As a result of the rotating magnetic field, the signal induced in a sensor coil reflects a signal strength dependent on the distance from the generating coils. Stewart discloses

> The rotating magnetic field generator, illustratively provided by the coils **32**, **33** and associated generating circuitry **35**, generates a rotating magnetic field radiating outwardly to define the proximate area **23** which extends to the perimeter **24**. The magnetic field penetrates common building materials and other impediments that could greatly effect an electromagnetic or RF field as will be appreciated by those skilled in the art. In addition, the magnetic field decreases in intensity relatively quickly and therefore may be used to provide a relatively sharply defined perimeter **24**. . . .
>
> The rotating magnetic field may be circularly polarized to thereby provide a generally circular proximate area **23** and associated perimeter **24** as shown perhaps best in FIG. 1. In other embodiments, elliptical or other polarizations could also be used to define different shapes for the proximate area.

Stewart, Col. 4, lines 7-25; *see also* Fig. 1.

3. Patent 6,407,677: Avenel

United States Patent Number 6,407,677, titled "Device for low-frequency communication by magnetic coupling," issued to Avenel, et al., on June 18, 2002, is cited by the Examiner to support his assertion of obviousness.

Avenel discloses "a device for low-frequency communication by magnetic coupling between emission by magnetic field and a reception antenna." Avenel, Col. 1, lines 5-7. In particular, the device of Avenel is used to control access to a motor

vehicle, with the transmitting, or emission, antenna on the vehicle and the receiving antenna in an identification member, such as a tag or credit card type plate. *Id.*, Col. 1, lines 8-12. Avenel further discloses that

> one of either the emitter or the receiver being furnished with a loop antenna, characterized in that the other of either the emitter or the receiver is constituted by the association of three coils wound around three substantially perpendicular axes defining a trihedral so as to obtain an omnidirectional magnetic field by supplying said coils with currents of like frequency.

Id. at Col. 1, lines 38-44 (emphasis added). The three coils of one device work in conjunction with the single coil (loop) of the other device. *See* Avenel, Col. 1, line 65, to Col. 2, line 6; Col. 3, lines 35-39.

An omnidirectional emission magnetic field is generated by applying "currents of like frequency [that] are 120° or 60° out of phase." *Id.* at Col. 2, lines 39-41. Avenel does not disclose a receiving antenna with only two coils. Neither does Avenel disclose any form of modulation to be applied to the coil, either individually or collectively.

4. Reasons for Believing Each Claim Is Separately Patentable

Appellants believe each Claim to be separately patentable and does not stand or fall together with any other Claim. Appellants offer two reasons for believing each Claim to be separately patentable. First, the Examiner has not provided Appellants with specific grounds for the rejections, but, instead, offered conclusory statements of obviousness. Second, the Examiner, in his several Office Actions, has made omnibus rejections.

(a) The Standard for Using Common Knowledge to Support a Rejection

The use of facts outside of the record before the United States Patent and Trademark Office to support a rejection is acceptable provided that certain criteria are met. Section 2144.03 of the Manual of Patent Examining Procedure states:

> The rationale supporting an obviousness rejection may be based on common knowledge in the art or "well-known" prior art. The examiner may take official notice of facts outside the records which are capable of instant and unquestionable demonstration as being "well-known" in the art.
>
> * * *

> It is never appropriate to rely solely on "common knowledge" in the art without evidentiary support in the record,as the principal evidence upon which a rejection was based. *Zurko*, 258 F.3d at 1385, 59 U.S.P.Q.2d at 1697 ("[T]he Board cannot simply reach conclusions based on its own understanding or experience—or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings.").

MPEP § 2144.03, pp. 2100-136 to 137, (emphasis added). The MPEP further states:

> If applicant adequately traverses the examiner's assertion of official notice, the examiner must provide documentary evidence in the next Office action if the rejection is to be maintained.

MPEP § 2144.03, pg. 2100-138.

(b) The Examiner has not Provided Support of Common Knowledge Assertions

With respect to the first reason, that the Examiner has not provided Applicants with specific grounds for rejection, Appellants point out that the Examiner has substantially repeated the same rejection in each of the four Office Actions. In the second Final Office Action, dated April 4, 2004, the Examiner states:

> Thus, Avenel et al are cited as resolving the level of ordinary skill in the antenna art and teach the use of three perpendicular coils 1,2, and 3 having and disposed along respective axes. Avenel et al teach that the emitter (Le., transmitter) may employ these three loop coils. Thus, it would have been obvious to the skilled artisan to employ such and antenna arrangement in lieu of the two axes/loop coils 32,33 of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined.
>
> . . . It would have been obvious to the skilled artisan that the processor must determine the total power or signal strength at the antennas 53-55. The three antennas are oriented in three distinct and different axes, and thus the total power is connected to a common node connected to the detector 56 connected to the demodulator 60 and connected to the processor 61. Stewart et al discuss the intensity threshold indicative that the receiver tag 25 is proximate the base station 21 within the perimeter 24. One skilled in the art recognizes as obvious that there is a measurement circuit implied in the circuitry since there is a preset threshold power level employed in the system. A skilled artisan would find it obvious that the threshold power level is achieved by measurement of the total power incident at the antenna array. The acknowledgement detection function (col. 5, lines 51-54) cannot be performed without the total power incident on the antenna array being measured.

> . . . Regarding Claims 4-6,12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken. As to Claims 7 and 28, the line frequency multiple defining the carrier frequency is an obvious method used in transmitters. As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan. As to Claims 9-11, the particular modulation technique, in such a communication system, is also obvious to the skilled artisan.

Paper Number 20040407, pg. 2-4, (emphasis added). A substantial portion of the Examiner's rejection consists of unsupported, conclusory statements, which have been emphasized above. In fact, in one instance, the Examiner took notice that using a specific number of antennas in an array is obvious.

Applicants, in their Response to the various Office Actions, repeatedly asked the Examiner to comply with MPEP § 24144.03. Applicants have specifically pointed out the errors in the Examiner's action, refuted the Examiner's statements of obviousness, and requested that the Examiner provide documentation to substantiate his unsupported assertions of obviousness. However, the Examiner has not provided any basis for his conclusory assertions of obviousness. In addressing Applicants' Response to Arguments in the second Final Office Action, the Examiner attempts to justify his claims of obviousness by stating:

> Regarding the remarks to the obviousness, the motivation to combine is to allow a three dimensional and omnidirectional antenna system to be defined when employing the antenna of Avenel et al. Mere substitution of antennas is obvious for providing specific pattern control. Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system.
>
> Regarding applicant's arguments relative to the number of coils not recited in Claims 28 and 30, the preamble sets the stage for use of a system. Applicant's preamble in both Claims 28 and 30 recite that the boundary detection is independent of orientation. A thee axis antenna system is required to meet such an environment. Avenel et al provide such a system.
>
> Since evidence of obviousness has been shown in view of the combination of prior art it is not seen how the claims at issue patentably define thereover. The rejection stands.

Paper Number 20040407, pg. 4-5, (emphasis added). As shown above, the Examiner makes additional unsupported assertions to support his previous states of obviousness. Accordingly, Appellants believe that, in order to adequate overcome the Examiner's unstated reasons for finding obviousness, each claim must be argued individually and that the claims do not stand or fall together.

(c) Examiner has Made Omnibus Rejections

With respect to the second reason, that the Examiner has made omnibus rejections, Appellants point to the rejections by the Examiner, reproduced below. The MPEP provides guidance to examiners in rejecting claims. The MPEP states that omnibus rejections should be avoided. MPEP § 707(d), pg. 700-113, 8th ed., rev. 1. Further, the MPEP states: "A plurality of claims should never be grouped together in a common rejection, unless that rejection is equally applicable to all claims in the group." *Id.* This is in keeping with the goal of examination, which is "to clearly articulate any rejection early in the prosecution process so that the applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity." MPEP § 706, pg. 700-17.

In his rejection, the Examiner has not addressed each and every limitation individually to show that the elements and limitations are disclosed in the references as required to establish a *prima facie* case of obviousness. Because of the Examiner's omnibus rejection, Appellants are placed in the position of not knowing the specific grounds of rejection for each claim and can only respond by arguing the patentability of each claim individually.

(d) Conclusion

Because the Examiner's rejections are largely based on unsupported statements of knowledge alleged to be "common" and because the Examiner has applied a blanket rejection to all Claims and not addressed each Claim individually, Appellants have not been afforded a reasonable opportunity to clearly understand the Examiner's rejection of each Claim. For these reasons, Appellants herein address each claim separately to underscore the belief that each claim is separately patentable and, further, that each claim does not stand or fall together with any other claim.

5. Dependent Claim 4

Claim 4 of the Application depends from Claim 29. Claim 4 has been amended to change its dependency from Claim 3, which has been cancelled, to Claim 29, which has been added and combines independent Claim 1 with dependent Claim 3.

(a) Examiner's Rejection

With respect to Claim 4, in the Examiner's second Final Office Action the Examiner states:

> 2. Claims 4-13, 16-23 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart et al. (6392547) in view of Avenel et al. (6407677).
>
> Regarding Claims 4-13, 16-23 and 28-30, Stewart et al show a proximity monitoring system capable of accurate boundary detection independent of orientation comprising: a transmitter **21** including an antenna array **32**, **33** that continuously generates a magnetic field based on the transmitted electrical signal and having an intensity within the area **23** and defining a boundary **24**, a receiver module **25** including an antenna array **53-55** responsive to the magnetic field, in any direction, and connected to a single channel receiver **56** and a measurement circuit for determining a total power of the magnetic field incident at the antenna array.
>
> Stewart et al do not teach three coils perpendicular to each other in the transmit circuit, but rather shows only two, **32** and **33**. Thus, Avenel et al are cited as resolving the level of ordinary skill in the antenna art and teach the use of three perpendicular coils **1**, **2**, and **3** having and disposed along respective axes. Avenel et al teach that the emitter (i.e., transmitter) may employ these three loop coils. Thus, it would have been obvious to the skilled artisan to employ such and antenna arrangement in lieu of the two axes/loop coils **32**, **33** of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined.
>
> Also, Stewart et al do not specifically call the processor **61** a "measurement circuit", but in column 5, lines 30-53 suggest to the skilled artisan that the processor performs a number of different functions. It would have been obvious to the skilled artisan that the processor must determine the total power or signal strength at the antennas **53-55**. The three antennas are oriented in three distinct and different axes, and thus the total power is connected to a common node connected to the detector **56** connected to the demodulator **60** and connected to the processor **61**. Stewart et al discuss the intensity threshold indicative that the receiver tag **25** is proximate the base station **21** within the perimeter **24**. One skilled in the art recognizes as obvious that there is a measurement circuit implied in the circuitry since there is a preset threshold power level employed in the system. A skilled artisan would find it obvious that

the threshold power level is achieved by measurement of the total power incident at the antenna array. The acknowledgement detection function (col. 5, lines 51-54) cannot be performed without the total power incident on the antenna array being measured.

In a typical voting antenna system, power or signal strength at each antenna is measured and selected. Total power of the antennas is measured relative to other antenna elements and thus the proper antenna is employed in the respective plane. Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken.

Paper Number 20040407, pg. 2-3 (emphasis added). In addressing Applicants' Response to Arguments in the second Final Office Action, the Examiner states:

3. Applicant's arguments filed 26 January 2004 have been fully considered but they are not persuasive. Specifically, regarding applicant's remarks to the procedural status, the rejection based upon Stewart alone was withdrawn based upon applicant's affidavit. It still qualifies as a reference when combined with another to establish the level of ordinary skill and evidence of obviousness according to Graham v. Deere.

* * *

Regarding the remarks to the obviousness, the motivation to combine is to allow a three dimensional and omnidirectional antenna system to be defined when employing the antenna of Avenel et al. Mere substitution of antennas is obvious for providing specific pattern control. Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system.

Paper Number 20040407, pg. 4-5.

(b) Appellants' Argument

Claim 4 depends from Claim 29 and includes the limitation that "said magnetic field is a composite magnetic field summing a first magnetic field component from said first transmitter antenna, a second magnetic field component from said second transmitter antenna, and a third magnetic field component from said third transmitter antenna." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the

prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Claim Interpretation

Claims are to be construed from the vantage point of a person skilled in the relevant art. *Vanderlande Industries Nederland BV v. ITC*, 366 F.3d 1311, 70 U.S.P.Q.2d 1696 (Fed. Cir. 2004). "The best source for understanding a technical term is the specification from which it arose, informed, as needed, by the prosecution history." *Multiform Desiccants Inc. v. Medzam Ltd.*, 133 F.3d 1473, 1478, 45 U.S.P.Q.2d 1429, 1433 (Fed. Cir. 1998); *See also Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582, 39 U.S.P.Q.2d 1573, 1576 (Fed. Cir. 1996). Accordingly, the limitations of this claim must be read in light of the Specification.

With respect to the "composite magnetic field," Applicants' Specification states: "The transmitter employs means for continuously broadcasting a 3-axis composite magnetic field having a single carrier frequency modulated using coherent binary phase shift keying (BPSK)." Paper No. 1, pg. 7, lines 22-24. With respect to the "magnetic field components," Applicants' Specification states that the receiver **11** extracts "a set of separately identifiable measures corresponding to the magnetic field components respectively associated with the set of separately identifiable signals continuously broadcast from the set of separately identifiable antenna coils." Paper No. 1, pg. 16, line 28, to 17, line 1. Accordingly, Claim 4 requires that the magnetic field be a composite magnetic field with three magnetic field components each emitted from one of three transmitter antennas.

2) Examiner's Omnibus Rejection

In his omnibus rejection the Examiner states: "Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken." This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. Applicants have requested the Examiner to provide support for his official notice of

obviousness, in accordance with MPEP Section 2144.03. The Examiner has not provided any support for his assertions.

Further, the 37 C.F.R. § 1.132 Declaration of James Rochelle directly addressed the Examiner's assertion of obviousness. *See* Declaration, para. 12-17. In particular, the Declaration sets forth facts supporting the Declarant's opinion that "connecting three antennas to a transmitter was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application Serial Number 09/779,076." Declaration, para. 17.

Claim 29, from which Claim 4 depends, includes a limitation relating to three transmitting antennas. Therefore, the Examiner's rejection based on the number of transmitting antennas properly belongs to Claim 29. Accordingly, the argument for Claim 29 addresses the Examiner's assertion that it is obvious to employ three transmitting antennas.

Regardless of the obviousness of the number of antennas, the Examiner has failed to address every element and limitation of the claim in question. As required by the third element for establishing a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP § 2143.

3) The Claim Limitation with respect to A Composite Magnetic Field

A composite magnetic field, as defined in the Specification, is not the same as a rotating magnetic field. *See* Declaration, para. 16. Stewart discloses rotating magnetic fields. *See* Declaration, para. 13-16. Avenel discloses an omnidirectional emission magnetic field and does not describe such a field as being at all similar to a composite magnetic field. Avenel, Col. 2, lines 39-41 ("The three coils **1**, **2** and **3** are traversed by currents of like frequency and are 120° or 60° out of phase. An omnidirectional emission magnetic field is thus obtained."). One skilled in the art recognizes that a rotating magnetic field is created by applying out-of-phase signals to multiple antenna coils sharing a common axis. Declaration, para. 14. Because neither Stewart nor Avenel disclose a magnetic field that is a composite magnetic field, which is a limitation of Claim 4, the Examiner has not satisfied the third element of a *prima facie* case of obviousness.

4) The Claim Limitation with respect to Magnetic Field Components

Further, neither Stewart nor Avenel disclose magnetic field components. Stewart discloses a rotating magnetic field and Avenel discloses an omnidirectional emission magnetic field, neither of which are composed of magnetic field components as defined in the Specification. Therefore, the Examiner has not satisfied the third element of a *prima facie* case of obviousness because neither reference discloses or teaches magnetic field components.

5) Conclusion

Claim 4 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 4 is allowable as depending from an allowable base claim. Accordingly, Appellants respectfully request that the rejection of Claim 4 be withdrawn.

6. Dependent Claim 5

Claim 5 of the Application depends from Claim 4 and has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 5, in the Examiner's second Final Office Action, the Examiner states:

> Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken.

Paper Number 20040407, pg. 3. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. The Examiner has not provided specific reasons for finding that the limitations of Claim 5 are obvious in view of Avenel, other than the following statement:

> Avenel et al are cited as resolving the level of ordinary skill in the antenna art and teach the use of three perpendicular coils 1, 2, and 3 having and disposed along respective axes. Avenel et al teach that the emitter (Le., transmitter) may

employ these three loop coils. Thus, it would have been obvious to the skilled artisan to employ such and antenna arrangement in lieu of the two axes/loop coils 32, 33 of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined.

Paper Number 20040407, pg. 2-3.

(b) Appellants' Argument

Claim 5 depends from Claim 4 and includes the limitation that "each of said first magnetic field component, said second magnetic field component, and said third magnetic field component is continuously transmitted using a single carrier frequency." As stated above, the limitations of this claim must be read in light of the Specification. Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Claim Interpretation

With respect to the "magnetic field components," Applicants' Specification states that the receiver **11** extracts "a set of separately identifiable measures corresponding to the magnetic field components respectively associated with the set of separately identifiable signals continuously broadcast from the set of separately identifiable antenna coils." Paper No. 1, pg. 16, line 28, to 17, line 1. Accordingly, Claim 5 requires that the magnetic field components, each emitted from one of three transmitter antennas, have the same carrier frequency and that those magnetic field components are separately identifiable signals .

2) Examiner's Omnibus Rejection

In his omnibus rejection the Examiner states: "Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken." This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

Applicants have requested the Examiner to provide support for his official notice of obviousness, in accordance with MPEP Section 2144.03.

Further, the 37 C.F.R. § 1.132 Declaration of James Rochelle directly addressed the Examiner's assertion of obviousness. *See* Declaration, para. 12-17. In particular, the Declaration sets forth facts supporting the Declarant's opinion that "connecting three antennas to a transmitter was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application Serial Number 09/779,076." Declaration, para. 17.

Claim 29, from which this claim ultimately depends, includes a limitation relating to three transmitting antennas. Therefore, the Examiner's rejection based on the number of transmitting antennas properly belongs to Claim 29. Accordingly, the argument for Claim 29 addresses the Examiner's assertion that it is obvious to employ three transmitting antennas.

Regardless of the obviousness of the number of antennas, the Examiner has failed to address every element and limitation of the claim in question. As required by the third element for establishing a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP § 2143.

3) The Claim Limitation with respect to Magnetic Field Components

Neither Stewart nor Avenel disclose magnetic field components as defined by Applicants in the Specification. Stewart discloses rotating fields. *See* Declaration, para. 13-16. Avenel discloses an omnidirectional emission magnetic field and does not describe such a field as being at all similar to a composite magnetic field. Avenel, Col. 2, lines 39-41 ("The three coils **1**, **2** and **3** are traversed by currents of like frequency and are 120° or 60° out of phase. An omnidirectional emission magnetic field is thus obtained."). One skilled in the art recognizes that a rotating magnetic field is created by applying out-of-phase signals to multiple antenna coils sharing a common axis. Declaration, para. 14. Further, one skilled in the art recognizes that a rotating magnetic field is received as a single signal that appears to be rotating because of the phase relationship of the signal applied to each transmitting antenna. A rotating magnetic field, as disclosed by Stewart, and an omnidirectional emission magnetic

field, as disclosed by Avenel, do not contain separately identifiable signals associated with each transmitting antenna. Because the Examiner has not shown that either Stewart or Avenel discloses or teaches magnetic field components, the Examiner has not satisfied the third element of a *prima facie* case of obviousness.

4) Conclusion

Claim 5 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 5 is allowable as depending from an allowable base claim and dependent claim. Accordingly, Appellants respectfully request that the rejection of Claim 5 be withdrawn.

7. Dependent Claim 6

Claim 6 of the Application depends from Claim 4 and has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 6, in the Examiner's second Final Office Action, the Examiner states:

> Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken.

Paper Number 20040407, pg. 3. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. The Examiner has not provided specific reasons for finding that the limitations of Claim 6 are obvious in view of Avenel, other than the following statement:

> Avenel et al are cited as resolving the level of ordinary skill in the antenna art and teach the use of three perpendicular coils 1, 2, and 3 having and disposed along respective axes. Avenel et al teach that the emitter (Le., transmitter) may employ these three loop coils. Thus, it would have been obvious to the skilled artisan to employ such and antenna arrangement in lieu of the two axes/loop coils 32, 33 of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined.

Paper Number 20040407, pg. 2-3. With respect to modulation, the Examiner provides the following in response to Applicants' Response, however, the Examiner does not identify the claims to which the comments are directed:

> Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system.

Paper Number 20040407, pg. 4-5.

(b) Appellants' Argument

Claim 6 depends from Claim 5 and includes the limitation that "said single carrier frequency is uniquely modulated for each of said first magnetic field component, said second magnetic field component, and said third magnetic field component." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Claim Interpretation

The limitations of this claim must be read in light of the Specification. With respect to the "magnetic field components," Applicants' Specification states that the receiver **11** extracts "a set of separately identifiable measures corresponding to the magnetic field components respectively associated with the set of separately identifiable signals continuously broadcast from the set of separately identifiable antenna coils." Paper No. 1, pg. 16, line 28, to 17, line 1. Accordingly, Claim 6 requires that the single carrier frequency be uniquely modulated for each of the magnetic field components.

2) Examiner's Omnibus Rejection

In his omnibus rejection the Examiner states: "Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas

and/or two receiver antennas, and notice of such use is hereby taken." This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. Applicants have requested the Examiner to provide support for his official notice of obviousness, in accordance with MPEP Section 2144.03.

Further, the 37 C.F.R. § 1.132 Declaration of James Rochelle directly addressed the Examiner's assertion of obviousness. *See* Declaration, para. 12-17. In particular, the Declaration sets forth facts supporting the Declarant's opinion that "connecting three antennas to a transmitter was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application Serial Number 09/779,076." Declaration, para. 17.

Claim 29, from which this claim ultimately depends, includes a limitation relating to three transmitting antennas. Therefore, the Examiner's rejection based on the number of transmitting antennas properly belongs to Claim 29. Accordingly, the argument for Claim 29 addresses the Examiner's assertion that it is obvious to employ three transmitting antennas.

Regardless of the obviousness of the number of antennas, the Examiner has failed to address every element and limitation of the claim in question. As required by the third element for establishing a *prima facie* case of obviousness, "the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP § 2143.

3) The Claim Limitation with respect to Modulation

As stated previously, neither reference cited by the Examiner discloses magnetic field components as defined by Applicants in the Specification. Further, nether Stewart nor Avenel disclose modulating the signal applied to each individual antenna.

Stewart discloses a modulator **41**, **70** in the base station **21**, **21'**. Stewart, Figs. 3, 5. Stewart does not describe the modulator **41** other than to state: "This circuitry **35** may include a driver **41** for driving the wire coils **32**, **33** at a desired power level and frequency." Stewart, Col. 3, lines 64-65. However, Stewart states:

> The tag **25** illustratively includes a magnetic field detection circuit **56** which, in turn, is connected to a demodulator **60** for at least one of the direction and speed of the rotating magnetic field. By modulating the rotating magnetic field from the base station **21** and demodulating the field at the tag **25**, the tag and base station may be effectively coded together so that the tag is selectively responsive only to the base station to which it is assigned. Accordingly, two or more proximity detection systems **20** may be located adjacent one another and still work independently.

Stewart, Col. 4, lines 57-61. This embodiment of Stewart describes modulating the rotating magnetic field as a whole to transmit information to the receiver and to distinguish one base station **21** from another.

> The base station **21'** may include a spread spectrum modulator **70** and the tag **25'** may include a spread spectrum demodulator **71**. . . . The spread spectrum modulator **70** and demodulator **71** are shown in place of the encoding modulator **41** (FIG. 3) and associated demodulator **60** (FIG. 4), however, those of skill in the art will recognize that in other embodiments, these two types of modulation/demodulation can be used in combination.
>
> As will be readily appreciated by those skilled in the art, the spread spectrum technique may be used to improve performance against the mainly continuous wave interference sources that may be present in the environment. The waveform energy is spread across a wide bandwidth at the base station **21'** and then recombined at the tag **25'**. This has the effect of spreading the interference energy at the tag **25'** across a wide bandwidth allowing it to be filtered out.

Stewart, Col. 6, lines 5-24. This second embodiment of Stewart again describes modulating the rotating magnetic field as a whole to improve performance and reduce interference. Neither embodiment of Stewart involves modulating the signal applied to each individual transmitting antenna. Further, Figures 3 and 5 of Stewart show a single signal to the transmitting coils **32**, **33**. Stewart, Figs. 3, 5.

Avenel does not disclose or teach applying a modulated signal, either as a whole or individually, to the coils **1**, **2** and **3**. *See, generally*, Avenel.

Because neither Stewart nor Avenel disclose modulating the signal applied to each individual transmitting antenna, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

The Examiner makes the bald assertion: "Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system." Paper Number 20040407, pg. 4-5. The Examiner has not specified to which claim this comment is directed; however, Appellants believe it was intended as a comment with respect to Claims 9-11, which include limitations for a specific type of modulation. Regardless, Appellants are not able to determine the Examiner's meaning or relevance of this comment because the claimed device can be constructed and operated without an FCC license and without being subject to FCC regulations and/or rules with respect to modulation.

4) Conclusion

Claim 6 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 6 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 6 be withdrawn.

8. Dependent Claim 7

Claim 7 of the Application depends from Claim 5 and has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 7, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 7 and 28, the line frequency multiple defining the carrier frequency is an obvious method used in transmitters.

Paper Number 20040407, pg. 3-4.

(b) Appellants' Argument

Claim 7 depends from Claim 5 and includes the limitation that "said single carrier frequency is a programmable integral multiple of a power supply line

frequency." Appellants respectfully submit that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Not all Claim Limitations are Disclosed in the References

In his rejection, the Examiner makes the assertion that "the line frequency multiple defining the carrier frequency is an obvious method used in transmitters." Paper Number 20040407, pg. 3-4.

Initially, Appellants point out that neither Stewart nor Avenel disclose defining the carrier frequency with respect to a line frequency multiple. Accordingly, this limitation is not disclosed or taught by the cited references.

With respect to the Examiners' bald assertion of obviousness, Applicants have requested, in their Responses to Office Action, the Examiner to provide support for his notice of obviousness, in accordance with MPEP Section 2144.03. The Examiner has not provided any support for his assertion of obviousness. It is never appropriate to rely solely on common knowledge in the art without evidentiary support in the record as the principal evidence upon which a rejection was based. *See In re Zurko*, 258 F.3d 1379, 1386, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001).

Accordingly, because neither Stewart nor Avenel disclose defining the carrier frequency with respect to a line frequency multiple, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

2) Conclusion

Claim 7 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 7 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 7 be withdrawn.

9. Dependent Claim 8

Claim 8 of the Application depends from Claim 5 and has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 8, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

(b) Appellants' Argument

Claim 8 depends from Claim 5 and includes the limitation that "said single carrier frequency is derived from a crystal oscillator using a phase locked loop." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Not all Claim Limitations are Disclosed in the References

In his rejection, the Examiner makes the assertion that "the . . . PLL . . . are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." Paper Number 20040407, pg. 4.

Initially, Appellants point out that neither Stewart nor Avenel disclose deriving the carrier frequency from a crystal oscillator using a phase locked loop. Accordingly, this limitation is not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel.

The Declaration filed with the Response on January 26, 2004, established facts showing that utilizing the PLL in a receiver was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 28-32. The Examiner accepted this evidence and withdrew his rejection to Claim 8. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

Accordingly, because neither Stewart nor Avenel disclose defining the carrier frequency, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

2) Examiner's Omnibus Rejection

Further, because the Examiner used an omnibus rejection to reject Claim 8 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

3) Conclusion

Claim 8 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 8 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 8 be withdrawn.

10. Dependent Claim 9

Claim 9 of the Application depends from Claim 5 and has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 9, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 9-11, the particular modulation technique, in such a communication system, is also obvious to the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. With respect to modulation, the Examiner provides the following in response to Applicants' Response, however, the Examiner does not identify to which claims are being referred:

> Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system.

Paper Number 20040407, pg. 4-5.

(b) Appellants' Argument

Claim 9 depends from Claim 5 and includes the limitation that "said single carrier signal is modulated using a binary phase shift keying waveform." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection and the Claim Limitation with respect to Modulation

In his omnibus rejection, the Examiner makes the assertion that "the particular modulation technique, in such a communication system, is also obvious to the skilled artisan." Paper Number 20040407, pg. 4.

Initially, Appellants point out that neither Stewart nor Avenel disclose modulating using a binary phase shift keying waveform. Accordingly, this limitation is not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the

rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel.

The Declaration filed with the Response on January 26, 2004, established facts showing that modulating using a binary phase shift keying waveform was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 33-40. The Examiner accepted this evidence and withdrew his rejection to Claim 9. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

The Examiner makes the bald assertion: "Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system." Paper Number 20040407, pg. 4-5. The Examiner has not specified to which claim this comment is directed; however, Appellants believe it was intended as a comment with respect to Claims 9-11, which include limitations for a specific type of modulation. Regardless, Appellants are not able to determine the Examiner's meaning or relevance of this comment because the claimed device can be constructed and operated without FCC license or subject to FCC regulations and/or rules with respect to modulation.

In particular, the Examiner states that: "Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results." Paper Number 20040407, pg. 4. This assertion of obviousness is unsupported by the Examiner. Additionally, Applicants have expended great effort in the Specification to describe the modulation, which was not known in the art of proximity monitoring at the time of filing the Application. *See* Paper No. 1, Figs. 2, 3a, 9a, and 9d, and associated text in the Specification.

Accordingly, because neither Stewart nor Avenel disclose modulating using a binary phase shift keying waveform, the Examiner has not satisfied the third element

of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 9 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 9 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 9 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 9 be withdrawn.

11. Dependent Claim 10

Claim 10 of the Application depends from Claim 9 and has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 10, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 9-11, the particular modulation technique, in such a communication system, is also obvious to the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. With respect to modulation, the Examiner provides the following in response to Applicants' Response, however, the Examiner does not identify to which claims are being referred:

> Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of

use is selected according to licensing rules for the particular communication system.

Paper Number 20040407, pg. 4-5.

(b) Appellants' Argument

Claim 10 depends from Claim 9 and includes the limitation of "a coherent said binary phase shift keying waveform is modulated using a waveform produced by integral ratio frequency division of a transmitter system clock." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection and the Claim Limitations

In his omnibus rejection, the Examiner makes the assertion that "the particular modulation technique, in such a communication system, is also obvious to the skilled artisan." Paper Number 20040407, pg. 4.

Initially, Appellants point out that neither Stewart nor Avenel disclose modulating a coherent binary phase shift keying waveform with a waveform produced by integral ratio frequency division of a transmitter system clock. Accordingly, this limitation is not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel.

The Declaration filed with the Response on January 26, 2004, established facts showing that modulating a coherent binary phase shift keying waveform with a waveform produced by integral ratio frequency division of a transmitter system clock was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 33-40. The Examiner accepted this evidence and withdrew his rejection to Claim 10. This

withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

With respect to the Examiners bald assertion regarding obviousness, Appellants incorporate by reference the argument made in the section above with respect to Claim 9.

Accordingly, because neither Stewart nor Avenel disclose modulating using a binary phase shift keying waveform, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 10 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 10 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 10 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 10 be withdrawn.

12. Dependent Claim 11

Claim 11 of the Application depends from Claim 9 and has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 11, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 9-11, the particular modulation technique, in such a communication system, is also obvious to the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper

Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. With respect to modulation, the Examiner provides the following in response to Applicants' Response, however, the Examiner does not identify to which claims are being referred:

> Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system.

Paper Number 20040407, pg. 4-5.

(b) Appellants' Argument

Claim 11 depends from Claim 9 and includes the limitation that "said binary phase shift keying waveform is selected to produce a high degree of rejection of interference at a power line frequency and any significant harmonics of the power line frequency and to allow accurate decomposition of said composite magnetic field into said first magnetic field component, said second magnetic field component, and said third magnetic field component." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection and the Claim Limitations

In his omnibus rejection, the Examiner makes the assertion that "the particular modulation technique, in such a communication system, is also obvious to the skilled artisan." Paper Number 20040407, pg. 4.

Initially, Appellants point out that neither Stewart nor Avenel disclose a binary phase shift keying waveform having the features included in Claim 11. Accordingly, this limitation is not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and

withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel.

The Declaration filed with the Response on January 26, 2004, established facts showing that modulating a binary phase shift keying waveform was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 33-40. The Examiner accepted this evidence and withdrew his rejection to Claim 11. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

With respect to the Examiners bald assertion regarding obviousness, Appellants incorporate by reference the argument made in the section above with respect to Claim 9.

Accordingly, because neither Stewart nor Avenel disclose a binary phase shift keying waveform having the features included in Claim 11, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 11 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 11 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 11 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 11 be withdrawn.

13. Dependent Claim 12

Claim 12 of the Application depends from Claim 29. Claim 12 has been amended to change its dependency from Claim 3, which has been cancelled, to Claim 29, which has been added and combines independent Claim 1 with dependent Claim 3.

(a) Examiner's Rejection

With respect to Claim 12, in the Examiner's second Final Office Action, the Examiner states:

> Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken.

Paper Number 20040407, pg. 3. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. The Examiner has not provided specific reasons for finding that the limitations of Claim 6 are obvious in view of Avenel, other than the following statement:

> Avenel et al are cited as resolving the level of ordinary skill in the antenna art and teach the use of three perpendicular coils **1**, **2**, and **3** having and disposed along respective axes. Avenel et al teach that the emitter (i.e., transmitter) may employ these three loop coils. Thus, it would have been obvious to the skilled artisan to employ such and antenna arrangement in lieu of the two axes/loop coils **32**, **33** of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined.

Paper Number 20040407, pg. 2-3.

(b) Appellants' Argument

Claim 12 depends from Claim 29 and includes the limitation that "said first transmitter antenna, said second transmitter antenna, and said transmitter third antenna are constructed using antenna coils having substantially similar dimensions." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the

prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken." The Examiner attempts to justify this assertion by stating that Avenel shows the level of ordinary skill in the antenna art. Paper Number 20040407, pg. 2-3. However, the instant Application deals with the art of proximity monitoring systems for animals and pets, and, although Avenel discloses a communications device for vehicles, it does not disclose or teach using multiple antennas with proximity monitoring systems for animals and pets.

Claim 29, from which this claim ultimately depends, includes a limitation relating to three transmitting antennas. Therefore, the Examiner's rejection based on the number of transmitting antennas properly belongs to Claim 29. Accordingly, the argument for Claim 29 addresses the Examiner's assertion that it is obvious to employ three transmitting antennas.

With respect to the limitations of Claim 12, Appellants point out that Stewart does not disclose three transmitter antennas of any particular size; however, Avenel discloses three coils **1**, **2**, **3**, that "can be carried by one and the same spherical core." Avenel, Col. 2, lines 42-43. However, other than the Examiner's unsupported assertion of obviousness with respect to the number of antenna coils, the Examiner has not shown any suggestion or motivation to modify Stewart with respect to the antenna dimensions. *See* MPEP § 2143. Appellants discuss the lack of suggestion and motivation for modifying Stewart in view of Avenel with respect to Claim 29. In view of that discussion and the above, Appellants respectfully submit that the Examiner has not satisfied the first element of *prima facie* case of obviousness.

2) Conclusion

Claim 12 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 12 is allowable as depending from

an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 12 be withdrawn.

14. Dependent Claim 13

Claim 13 of the Application depends from Claim 29. Claim 13 has been amended to change its dependency from Claim 3, which has been cancelled, to Claim 29, which has been added and combines independent Claim 1 with dependent Claim 3.

(a) Examiner's Rejection

With respect to Claim 13, in the Examiner's second Final Office Action, the Examiner states:

> Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken.

Paper Number 20040407, pg. 3. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. The Examiner has not provided specific reasons for finding that the limitations of Claim 6 are obvious in view of Avenel, other than the following statement:

> Avenel et al are cited as resolving the level of ordinary skill in the antenna art and teach the use of three perpendicular coils **1**, **2**, and **3** having and disposed along respective axes. Avenel et al teach that the emitter (i.e., transmitter) may employ these three loop coils. Thus, it would have been obvious to the skilled artisan to employ such and antenna arrangement in lieu of the two axes/loop coils **32**, **33** of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined.

Paper Number 20040407, pg. 2-3.

(b) Appellants' Argument

Claim 13 depends from Claim 29 and includes the limitation that "one of said first transmitter antenna, said second transmitter antenna, and said transmitter third antenna is constructed from a pair of said antenna coils." Appellants respectfully

submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken." However, this rejection does not address the specific limitations contained in Claim 13, namely that one of the antennas is constructed from a pair of antenna coils.

Claim 29, from which this claim ultimately depends, includes a limitation relating to three transmitting antennas. Therefore, the Examiner's rejection based on the number of transmitting antennas properly belongs to Claim 29. Accordingly, the argument for Claim 29 addresses the Examiner's assertion that it is obvious to employ three transmitting antennas.

With respect to the limitations of Claim 12, Appellants point out that neither Stewart nor Avenel disclose the number of coils making up any of the antennas. Accordingly, this limitation is not disclosed or taught by the cited references. Neither does the Examiner state how Avenel applies to this claim. Because neither Stewart nor Avenel disclose the number of coils making up any of the antennas, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim. Because the Examiner used an omnibus rejection to reject Claim 13 and has not provided a reason for rejecting Claim

13 based on Avenel, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 13 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 13 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 13 be withdrawn.

15. Dependent Claim 14

Claim 14 of the Application has been cancelled. However, the Examiner has rejected this claim with the following assertion:

> Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken.

Paper Number 20040407, pg. 3. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

Appellants respectfully submit that the rejection of Claim 14 is improper considering that Claim 14 is not pending in the Application.

16. Dependent Claim 16

Claim 16 of the Application depends from Claim 30. Claim 16 has been amended to change its dependency from Claim 14, which has been cancelled, to Claim 30, which has been added and combines independent Claim 1 with dependent Claim 14.

(a) Examiner's Rejection

With respect to Claim 16, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

(b) Appellants' Argument

Claim 16 depends from Claim 30 and includes the limitation that "said receiver is fabricated on a single integrated circuit including an input amplifier, an I and Q baseband converter, a phase locked loop, a crystal oscillator, a baseband pass filter, and an I and Q baseband amplifier." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." Paper Number 20040407, pg. 4. The Examiner does not provide any other reason for rejecting this claim.

Initially, Appellants point out that neither Stewart nor Avenel disclose fabricating the receiver as described in Claim 16. Accordingly, the limitations of Claim 16 are not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel in Paper Number 17, but did not present any reasons as to why Avenel applied to the limitations of this

claim, particularly in view of the fact that Avenel does not disclose fabricating the receiver as described in Claim 16.

The Declaration filed with the Response on January 26, 2004, established facts showing that utilizing the claimed components in a receiver was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 28-32. The Examiner accepted this evidence and withdrew his rejection to Claim 16. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

Accordingly, because neither Stewart nor Avenel disclose the claimed components, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 16 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 16 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 16 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 16 be withdrawn.

17. Dependent Claim 17

Claim 17 of the Application has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 17, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

(b) Appellants' Argument

Claim 17 depends from Claim 16 and includes the limitation that "said receiver further includes a baseband sigma delta modulator for producing an I and Q bit stream." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." Paper Number 20040407, pg. 4. The Examiner does not provide any other reason for rejecting this claim.

Initially, Appellants point out that neither Stewart nor Avenel disclose fabricating the receiver as described in Claim 17. Accordingly, the limitations of Claim 17 are not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel in Paper Number 17, but did not present any reasons as to why Avenel applied to the limitations of this claim, particularly in view of the fact that Avenel does not disclose fabricating the receiver as described in Claim 17.

The Declaration filed with the Response on January 26, 2004, established facts showing that utilizing the claimed components in a receiver was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 28-32. The Examiner accepted this evidence and withdrew his rejection to Claim 17. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

Accordingly, because neither Stewart nor Avenel disclose the claimed components, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 17 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 17 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 17 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 17 be withdrawn.

18. Dependent Claim 18

Claim 18 of the Application has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 18, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper

Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

(b) Appellants' Argument

Claim 18 depends from Claim 17 and includes the limitation that "said receiver further includes a sigma delta converter digital filter for sampling said I and Q bit stream down to a sampling frequency that is nominally equivalent to twice a power line frequency." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." Paper Number 20040407, pg. 4. The Examiner does not provide any other reason for rejecting this claim.

Initially, Appellants point out that neither Stewart nor Avenel disclose fabricating the receiver as described in Claim 18. Accordingly, the limitations of Claim 18 are not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel in Paper Number 17, but did not present any reasons as to why Avenel applied to the limitations of this claim, particularly in view of the fact that Avenel does not disclose fabricating the receiver as described in Claim 18.

The Declaration filed with the Response on January 26, 2004, established facts showing that utilizing the claimed components in a receiver was not obvious to one

skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 28-32. The Examiner accepted this evidence and withdrew his rejection to Claim 18. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

Accordingly, because neither Stewart nor Avenel disclose the claimed components, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 18 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 18 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 18 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 18 be withdrawn.

19. Dependent Claim 19

Claim 19 of the Application has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 19, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

(b) Appellants' Argument

Claim 19 depends from Claim 16 and includes the limitation that "said I and Q baseband converter is a switching mixer." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." Paper Number 20040407, pg. 4. The Examiner does not provide any other reason for rejecting this claim.

Initially, Appellants point out that neither Stewart nor Avenel disclose a switching mixer. Accordingly, the limitations of Claim 19 are not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel in Paper Number 17, but did not present any reasons as to why Avenel applied to the limitations of this claim, particularly in view of the fact that Avenel does not disclose fabricating the receiver as described in Claim 19.

The Declaration filed with the Response on January 26, 2004, established facts showing that utilizing the claimed components in a receiver was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 28-32. The Examiner accepted this evidence and withdrew his rejection to Claim 19. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

Accordingly, because neither Stewart nor Avenel disclose the claimed components, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 19 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 19 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 19 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 19 be withdrawn.

20. Dependent Claim 20

Claim 20 of the Application depends from Claim 16. Claim 20 has been amended to correct one antecedent basis problem and one inconsistency resulting from a typographical mistake.

(a) Examiner's Rejection

With respect to Claim 20, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

(b) Appellants' Argument

Claim 20 depends from Claim 16 and includes the limitation that "said receiver further includes an analog-to-digital converter in electrical communication with said I

and Q baseband amplifier, said receiver module further comprising a digital signal processor in electrical communication with said analog-to-digital converter, said analog-to-digital converter producing an digital I and Q baseband signal from an output of said I and Q baseband amplifier." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." Paper Number 20040407, pg. 4. The Examiner does not provide any other reason for rejecting this claim.

Initially, Appellants point out that neither Stewart nor Avenel disclose a receiver using the claimed components. Accordingly, the limitations of Claim 20 are not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel in Paper Number 17, but did not present any reasons as to why Avenel applied to the limitations of this claim, particularly in view of the fact that Avenel does not disclose fabricating the receiver as described in Claim 20.

The Declaration filed with the Response on January 26, 2004, established facts showing that utilizing the claimed components in a receiver was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 28-32. The Examiner accepted this evidence and withdrew his rejection to Claim 20. This withdrawal is still valid

because the Examiner has not provided or presented any new reason for rejecting this claim.

Accordingly, because neither Stewart nor Avenel disclose the claimed components, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 20 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 20 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 20 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 20 be withdrawn.

21. Dependent Claim 21

Claim 21 of the Application has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 21, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

(b) Appellants' Argument

Claim 21 depends from Claim 20 and includes the limitation that "said digital signal processor extracts each of said first magnetic field component, said second magnetic field component, and said third magnetic field component from said digital I and Q baseband signal." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." Paper Number 20040407, pg. 4. The Examiner does not provide any other reason for rejecting this claim.

Initially, Appellants point out that neither Stewart nor Avenel disclose a digital signal processor operating as described in Claim 21. Accordingly, the limitations of Claim 21 are not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel in Paper Number 17, but did not present any reasons as to why Avenel applied to the limitations of this claim, particularly in view of the fact that Avenel does not disclose fabricating the receiver as described in Claim 21.

The Declaration filed with the Response on January 26, 2004, established facts showing that utilizing the claimed components in a receiver was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 28-32. The Examiner accepted this evidence and withdrew his rejection to Claim 21. This withdrawal is still valid

because the Examiner has not provided or presented any new reason for rejecting this claim.

Accordingly, because neither Stewart nor Avenel disclose the claimed components, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 21 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 21 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 21 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 21 be withdrawn.

22. Dependent Claim 22

Claim 22 of the Application has been amended to depend from Claim 2. The amendment to Claim 22 deletes the unnecessary limitations imposed by the prior dependence from Claim 21.

(a) Examiner's Rejection

With respect to Claim 22, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

(b) Appellants' Argument

Claim 22 depends from Claim 2 and includes the limitation that "said receiver module is carried by a pet, said receiver module further comprising a stimulus delivery system for applying a deterrent stimulus to the pet when the pet approaches said boundary." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Orphaned Claim

Claim 22 currently depends from Claim 2, which has been cancelled. This discrepancy has not been discovered until this time. Appellants failed to amend Claim 22 to depend from Claim 29 in the amendment in which Claims 1 and 2 were cancelled. For purposes of this Brief, Appellants address this claim as if it depends from Claim 29. Upon the Board finding this claim allowable, Appellants will amend Claim 22 to reflect its dependency from Claim 29.

2) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." Paper Number 20040407, pg. 4. The Examiner does not provide any other reason for rejecting this claim.

Initially, Appellants point out that neither Stewart nor Avenel disclose a receiver carried by a pet as described in Claim 22. Stewart states that it relates to "proximity detection of a person or object carrying a tag." Stewart, Col. 1, lines 13-14. Stewart describes examples such as child monitoring. Stewart, Col. 1, lines 17-24; Col. 3, lines 49-54. Stewart does not disclose or teach applying a deterrent stimulus. Accordingly, the limitations of Claim 22 are not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself,

was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel in Paper Number 17, but did not present any reasons as to why Avenel applied to the limitations of this claim, particularly in view of the fact that Avenel does not disclose fabricating the receiver as described in Claim 22.

The Declaration filed with the Response on January 26, 2004, established facts showing that utilizing the claimed components in a receiver was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 28-32. The Examiner accepted this evidence and withdrew his rejection to Claim 22. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

Accordingly, because neither Stewart nor Avenel disclose the claimed components, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 22 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

3) Conclusion

Claim 22 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 22 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 22 be withdrawn.

23. Dependent Claim 23

Claim 23 of the Application has not been amended and is an original claim.

(a) Examiner's Rejection

With respect to Claim 23, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407.

(b) Appellants' Argument

Claim 23 depends from Claim 16 and includes the limitation that "said receiver includes detection logic to detect an unusually rapid decrease in said total power of said magnetic field incident at said antenna array thereby indicating a loss of power to said transmitter." Appellants respectfully submit that the Examiner has not provided a proper rejection of this claim because the rejection is an omnibus rejection and that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Examiner's Omnibus Rejection

In his omnibus rejection, the Examiner makes the assertion that "the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." Paper Number 20040407, pg. 4. The Examiner does not provide any other reason for rejecting this claim. Appellants must assume that the Examiner believes that the detection logic included in Claim 23 falls within the "etc." in his rejection.

Initially, Appellants point out that neither Stewart nor Avenel disclose a power loss function as described in Claim 23. Accordingly, the limitations of Claim 23 are not disclosed or taught by the cited references. Further, on the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel in Paper Number 17,

but did not present any reasons as to why Avenel applied to the limitations of this claim, particularly in view of the fact that Avenel does not disclose fabricating the receiver as described in Claim 23.

The Declaration filed with the Response on January 26, 2004, established facts showing that utilizing the claimed components in a receiver was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application. Declaration, para. 28-32. The Examiner accepted this evidence and withdrew his rejection to Claim 23. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim.

Accordingly, because neither Stewart nor Avenel disclose the claimed components, the Examiner has not satisfied the third element of a *prima facie* case of obviousness, that the references teach or disclose every element of the claim.

Further, because the Examiner used an omnibus rejection to reject Claim 23 and has not provided specific reasons for rejecting this claim other than what was presented before the rejection was withdrawn, the rejection after withdrawal of the original rejection is invalid for being improper.

2) Conclusion

Claim 23 is allowable because a *prima facie* case of obviousness has not been made against the claim, notwithstanding that Claim 23 is allowable as depending from an allowable base claim and dependent claims. Accordingly, Appellants respectfully request that the rejection of Claim 23 be withdrawn.

24. Independent Claim 28

The first pending independent claim is Claim 28, which has been amended. The amendment to Claim 28 deletes the unnecessary limitation that the transmitter operates off of a direct connection to a power line.

(a) Examiner's Rejection

With respect to Claim 28, in the Examiner's second Final Office Action, the Examiner states:

> As to Claims 7 and 28, the line frequency multiple defining the carrier frequency is an obvious method used in transmitters.

Paper Number 20040407, pg. 4. In response to Applicants' Response to the first Final Office Action, the Examiner issued a second Non-Final Office Action, Paper Number 17. In the second Non-Final Office Action, the Examiner states that the "declaration under 37 CFR 1.132 filed 29 September 2003 is sufficient to overcome the rejection of claims 1-28 based upon Stewart et al. The arguments in the remarks is persuasive and, therefore, the finality of the previous Office action is withdrawn. Newly discovered reference to Avenel et al. (6407677 B1) is cited in this Office action." Paper No. 17, para. 1. After Applicants submitted a Response pointing out to the Examiner that Avenel was not applicable to Claim 28, the Examiner stated, in the second Final Office Action:

> 3. Applicant's arguments filed 26 January 2004 have been fully considered but they are not persuasive. Specifically, regarding applicant's remarks to the procedural status, the rejection based upon Stewart alone was withdrawn based upon applicant's affidavit. It still qualifies as a reference when combined with another to establish the level of ordinary skill and evidence of obviousness according to Graham v. Deere.
>
> * * *
>
> Regarding the remarks to the obviousness, the motivation to combine is to allow a three dimensional and omnidirectional antenna system to be defined when employing the antenna of Avenel et al. Mere substitution of antennas is obvious for providing specific pattern control. Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system.
>
> Regarding applicant's arguments relative to the number of coils not recited in Claims 28 and 30, the preamble sets the stage for use of a system. Applicant's preamble in both Claims 28 and 30 recite that the boundary detection is independent of orientation. A thee axis antenna system is required to meet such an environment. Avenel et al provide such a system.
>
> Since evidence of obviousness has been shown in view of the combination of prior art it is not seen how the claims at issue patentably define thereover. The rejection stands.

Paper Number 20040407, pg. 4-5.

(b) Appellants' Argument

Claim 28 includes the limitations of "a transmitter including at least one antenna array, said transmitter generating an electrical signal, said transmitter antenna array continuously generating a magnetic field based on said electrical signal, said magnetic field having an intensity and defining a boundary, said transmitter connected to a power supply line having a frequency; and a receiver module including an antenna array responsive to said magnetic field in electrical communication with a receiver, a measurement circuit for determining a total power of said magnetic field incident at said antenna array, and a digital signal processor for extracting components of said magnetic field and rejecting interference induced from said power supply line frequency." Appellants respectfully submit that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) The Avenel Reference is not applicable against Claim 28

The Examiner states that "Avenel et al teach the use of three perpendicular coils." However, Claim 28 does not include any limitation identifying the number of coils in any antenna array. The Examiner responds by stating: "Applicant's preamble in both Claims 28 and 30 recite that the boundary detection is independent of orientation. A thee axis antenna system is required to meet such an environment. Avenel et al provide such a system." Paper Number 20040407, pg. 5. The Examiner has not provided any support for the assertion that a three-axis antenna system is required or is inherent.

Applicants' Specification teaches that the receiver module "uses a novel single-output, two axis sensing antenna with orientation-independent response for detecting the total power in a 3-axis magnetic field signal." Paper Number 1, pg. 4, lines 18-21. Accordingly, Applicants' Specification refutes the Examiner's assertion that a three-axis antenna array is required for orientation independent detection. It is not clear if the Examiner means that the transmitting array must be a three-axis array because the Examiner has not so stated. Regardless of which antenna array the Examiner is referring to, Claim 28 does not include a limitation identifying the number of coils. The Examiner may not import limitations into a claim in order to apply a reference to

reject the claim. *See, e.g., Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 950, 28 U.S.P.Q.2d 1936, 1938 (Fed. Cir. 1993) ("It is improper for a court to add extraneous limitations to a claim, that is limitations added wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim." (citation omitted)). "The danger of improperly importing a limitation is even greater when the purported limitation is based upon a term not appearing in the claim." *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313 (Fed. Cir. 2003). Accordingly, Avenal is not a proper reference against Claim 28.

On the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel as described above.

Because the Examiner cites only Avenel to support a new rejection against Claim 28 and Avenel is not applicable to Claim 28, Appellants respectfully submit that the Examiner has not provided or presented any reason to reject Claim 28. Further, Appellants respectfully submit that the Examiner has not shown that all the elements and limitations of Claim 28 are included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness. Accordingly, Appellants respectfully request that the rejection to Claim 28 be withdrawn.

2) The line frequency multiple defining the carrier frequency is not an obvious method

Notwithstanding the above arguments, Appellants respectfully submit that the Examiner has not shown a *prima facie* case of obviousness due to another error of the Examiner. The Examiner has not shown that every element and limitation in the claim is included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness.

The Declaration filed with the Response on January 26, 2004, established facts showing that using multiples of the power line frequency to define the carrier frequency was not obvious to one skilled in the art of wireless containment and

proximity monitoring systems at the time of filing of the Application. Declaration, para. 24-27. The Examiner accepted this evidence and withdrew his rejection to Claim 28. This withdrawal is still valid because the Examiner has not provided or presented any new reason for rejecting this claim and the Examiner's stated reason that the three coil system of Avenel is implied in the preamble of Claim 28 is not proper.

Also, the Examiner asserts, with respect to Claim 28 that "the line frequency multiple defining the carrier frequency is an obvious method used in transmitters." Paper Number 20040407, pg. 3-4. However, the Examiner does not elaborate how his assertion relates to the claim limitation that the receiver module include "a digital signal processor for extracting components of said magnetic field and rejecting interference induced from said power supply line frequency." Neither does the Examiner identify in the references any corresponding structure.

Because neither Stewart nor Avenel disclose a digital signal processor as described in Claim 28, Appellants respectfully submit that the Examiner has not shown that all the elements and limitations of Claim 28 are included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness. Accordingly, Appellants respectfully request that the rejection to Claim 28 be withdrawn on these additional grounds.

3) The references do not disclose total power

Notwithstanding the above, Appellants respectfully submit that the Examiner has not shown a *prima facie* case of obviousness due to another error of the Examiner. The Examiner has not shown that every element and limitation in the claim is included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness.

Claim 28 includes the limitation that the measurement circuit determines "a total power of said magnetic field incident at said antenna array." Applicants' Specification describes the total power measure **381** as being representative of the total magnetic field signal power incident on the receiver **11**. *Paper No. 1*, pg. 36, lines 19-27; at 40, line 12, to 41, line 2; Figs. 10a, 10c. The Specification also states that the boundary is "defined by the locus of all points on a path surrounding the

transmitter 10 for which the total power in the composite magnetic field is a constant." *Paper No. 1*, pg. 22, lines 20-22; Fig. 1. Therefore, total power is dependent upon a composite magnetic field. As stated above with respect to Claim 4, Stewart discloses a rotating magnetic field, which is different than a composite magnetic field, and Avenel does not overcome that deficiency. Accordingly, the cited references do not disclose or teach measuring the total power.

Because neither Stewart nor Avenel disclose total power or a composite magnetic field, Appellants respectfully submit that the Examiner has not shown that all the elements and limitations of Claim 28 are included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness. Accordingly, Appellants respectfully request that the rejection to Claim 28 be withdrawn on these additional grounds.

25. Independent Claim 29

Claim 29 of the Application is a new claim that combines independent Claim 1 with dependent Claim 3.

(a) Examiner's Rejection

With respect to Claim 29, in the Examiner's second Final Office Action, the Examiner states:

> 2. Claims 4-13,16-23 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart et al. (6392547) in view of Avenel et al. (6407677). Regarding Claims 4-13,16-23 and 23-30, Stewart et al show a proximity monitoring system capable of accurate boundary detection independent of orientation comprising: a transmitter **21** including an antenna array **32**, **33** that continuously generates a magnetic field based on the transmitted electrical signal and having an intensity within the area **23** and defining a boundary **24**, a receiver module **25** including an antenna array **53-55** responsive to the magnetic field, in any direction, and connected to a single channel receiver **56** and a measurement circuit for determining a total power of the magnetic field incident at the antenna array.
>
> Stewart et al do not teach three coils perpendicular to each other in the transmit circuit, but rather shows only two, **32** and **33**. Thus, Avenel et al are cited as resolving the level of ordinary skill in the antenna art and teach the use of three perpendicular coils **1**, **2**, and **3** having and disposed along respective axes. Avenel et al teach that the emitter (i.e., transmitter) may employ these three loop coils. Thus, it would have been obvious to the skilled artisan to

employ such and antenna arrangement in lieu of the two axes/loop coils **32**, **33** of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined.

Also, Stewart et al do not specifically call the processor **61** a "measurement circuit", but in column 5, lines 30-53 suggest to the skilled artisan that the processor performs a number of different functions. It would have been obvious to the skilled artisan that the processor must determine the total power or signal strength at the antennas **53-55**. The three antennas are oriented in three distinct and different axes, and thus the total power is connected to a common node connected to the detector **56** connected to the demodulator **60** and connected to the processor **61**. Stewart et al discuss the intensity threshold indicative that the receiver tag **25** is proximate the base station **21** within the perimeter **24**. One skilled in the art recognizes as obvious that there is a measurement circuit implied in the circuitry since there is a preset threshold power level employed in the system. A skilled artisan would find it obvious that the threshold power level is achieved by measurement of the total power incident at the antenna array. The acknowledgement detection function (col. 5, lines 51-54) cannot be performed without the total power incident on the antenna array being measured.

In a typical voting antenna system, power or signal strength at each antenna is measured and selected. Total power of the antennas is measured relative to other antenna elements and thus the proper antenna is employed in the respective plane.

Paper Number 20040407, pg. 2-3.

(b) Appellants' Argument

Claim 29 includes the limitation of "a transmitter including at least one antenna array, said transmitter generating an electrical signal, said transmitter antenna array continuously generating a magnetic field based on said electrical signal, said magnetic field having an intensity and defining a boundary; said transmitter at least one antenna array includes a first transmitter antenna representing a first coordinate axis, a second transmitter antenna representing a second coordinate axis, and a third transmitter antenna representing a third coordinate axis; and a receiver module including an antenna array responsive to said magnetic field in electrical communication with a single channel receiver and a measurement circuit for determining a total power of said magnetic field incident at said antenna array." Appellants respectfully submit that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) Three transmitting antennas are not obvious

In his omnibus rejection, the Examiner makes the assertion that "it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken." The Examiner attempts to justify this assertion by stating that Avenel shows the level of ordinary skill in the antenna art. Paper Number 20040407, pg. 2-3. However, the Examiner does not explain how Avenel shows the level of ordinary skill in the same art as Stewart.

Stewart discloses a transmitter with two orthogonal coils **32**, **33** for generating a rotating magnetic field. Stewart, Col. 4, lines 7-11. It is important to note that a person of ordinary skill in the art would recognize that a rotating magnetic field is a magnetic field that rotates about an axis. The ordinary meaning of the term "rotate" is to turn or spin on an axis. Therefore, a rotating magnetic field is a magnetic field that turns or spins on an axis. One skilled in the art recognizes that a rotating magnetic field can be generated by any number of coils provided that each coil's axis lies in a plane and each coil is out of phase with its adjacent coil by the same number of degrees as its radial separation. The axis of rotation of the rotating magnetic field is normal (perpendicular) to the plane. *See* Declaration, para. 14.

Also, it is noted that a person of ordinary skill in the art of proximity monitoring systems would have an electrical engineering degree. Electrical engineers are familiar with rotating magnetic fields because every polyphase motor uses rotating magnetic fields and rotating magnetic fields are fundamental in physics, and electrical engineers, as part of their studies in obtaining a degree, study electric motors and physics. Further, assuming that Stewart documents the state of the art of proximity monitoring systems at the time to which it claims priority, November 26, 1999, then a person of ordinary skill in the art of proximity monitoring systems was familiar with rotating magnetic fields as used in proximity monitoring systems. *See* Stewart, Col. 1, lines 15-45 ("Background of the Invention").

For a rotating magnetic field generator with two coils, such as disclosed by Stewart, adding a third coil with an axis orthogonal to each axis of the other coils destroys the functionality of the rotating magnetic field generator. This is because the

third coil projects a magnetic field that does not share the same axis of rotation generated by the other two coils.

It is noted that Avenel does not disclose that its three-coil system **1**, **2**, **3** generates a rotating magnetic field. Avenel does disclose that an "omnidirectional magnetic field is generated by supplying the three coils with currents which are out of phase by about 60° or 120°." Avenel, Col. 1, lines 45-47. Avenel's omnidirectional magnetic field is a complex magnetic field that varies in three dimensions, but it is not a rotating magnetic field as disclosed in Stewart.

Accordingly, the Examiner taking notice that three transmitting antennas **1**, **2**, **3** as disclosed in Avenel can be substituted for two transmitting antennas **32**, **33** as disclosed in Stewart is misplaced because Stewart, with three transmitting antennas arranged and driven as disclosed by Avenel, will destroy the operability of the transmitting system of Stewart, which is based on a rotating magnetic field. Therefore, the second element of a *prima facie* case of obviousness, that there be a reasonable expectation of success, has not been shown by the Examiner.

Further, because the rotating magnetic field generator disclosed by Stewart would have its function changed by the addition of a third coil as disclosed by Avenel, there is no "suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings" as required by the first element of a *prima facie* case of obviousness. MPEP § 2143. Therefore, the first element of a *prima facie* case of obviousness has not been shown by the Examiner.

2) The references do not disclose total power

Notwithstanding the above, Appellants respectfully submit that the Examiner has not shown a *prima facie* case of obviousness due to another error of the Examiner. The Examiner has not shown that every element and limitation in the claim is included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness.

Claim 29 includes the limitation that a measurement circuit determines "a total power of said magnetic field incident at said antenna array." Applicants' Specification

describes the total power measure **381** as being representative of the total magnetic field signal power incident on the receiver **11**. *Paper No. 1*, pg. 36, lines 19-27; at 40, line 12, to 41, line 2; Figs. 10a, 10c. The Specification also states that the boundary is "defined by the locus of all points on a path surrounding the transmitter 10 for which the total power in the composite magnetic field is a constant." *Paper No. 1*, pg. 22, lines 20-22; Fig. 1. Therefore, total power is dependent upon a composite magnetic field. As stated above with respect to Claim 4, Stewart discloses a rotating magnetic field, which is different than a composite magnetic field, and Avenel does not overcome that deficiency. Accordingly, the cited references do not disclose or teach measuring the total power.

Because neither Stewart nor Avenel disclose total power or a composite magnetic field, Appellants respectfully submit that the Examiner has not shown that all the elements and limitations of Claim 29 are included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness. Accordingly, Appellants respectfully request that the rejection to Claim 29 be withdrawn on these additional grounds.

26. Independent Claim 30

Claim 30 of the Application is a new claim that combines independent Claim 1 with dependent Claim 14.

(a) Examiner's Rejection

With respect to Claim 30, in the Examiner's second Final Office Action, the Examiner states:

> 2. Claims 4-13,16-23 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stewart et al. (6392547) in view of Avenel et al. (6407677). Regarding Claims 4-13,16-23 and 23-30, Stewart et al show a proximity monitoring system capable of accurate boundary detection independent of orientation comprising: a transmitter **21** including an antenna array **32**, **33** that continuously generates a magnetic field based on the transmitted electrical signal and having an intensity within the area **23** and defining a boundary **24**, a receiver module **25** including an antenna array **53-55** responsive to the magnetic field, in any direction, and connected to a single channel receiver **56** and a measurement circuit for determining a total power of the magnetic field incident at the antenna array.

> Stewart et al do not teach three coils perpendicular to each other in the transmit circuit, but rather shows only two, **32** and **33**. Thus, Avenel et al are cited as resolving the level of ordinary skill in the antenna art and teach the use of three perpendicular coils **1**, **2**, and **3** having and disposed along respective axes. Avenel et al teach that the emitter (i.e., transmitter) may employ these three loop coils. Thus, it would have been obvious to the skilled artisan to employ such and antenna arrangement in lieu of the two axes/loop coils **32**, **33** of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined.
>
> Also, Stewart et al do not specifically call the processor **61** a "measurement circuit", but in column 5, lines 30-53 suggest to the skilled artisan that the processor performs a number of different functions. It would have been obvious to the skilled artisan that the processor must determine the total power or signal strength at the antennas **53-55**. The three antennas are oriented in three distinct and different axes, and thus the total power is connected to a common node connected to the detector **56** connected to the demodulator **60** and connected to the processor **61**. Stewart et al discuss the intensity threshold indicative that the receiver tag **25** is proximate the base station **21** within the perimeter **24**. One skilled in the art recognizes as obvious that there is a measurement circuit implied in the circuitry since there is a preset threshold power level employed in the system. A skilled artisan would find it obvious that the threshold power level is achieved by measurement of the total power incident at the antenna array. The acknowledgement detection function (col. 5, lines 51-54) cannot be performed without the total power incident on the antenna array being measured.
>
> In a typical voting antenna system, power or signal strength at each antenna is measured and selected. Total power of the antennas is measured relative to other antenna elements and thus the proper antenna is employed in the respective plane.

Paper Number 20040407, pg. 2-3. In addressing Applicants' Response to Arguments in the second Final Office Action, the Examiner states:

> Regarding applicant's arguments relative to the number of coils not recited in Claims 28 and 30, the preamble sets the stage for use of a system. Applicant's preamble in both Claims 28 and 30 recite that the boundary detection is independent of orientation. A thee axis antenna system is required to meet such an environment. Avenel et al provide such a system.
>
> Since evidence of obviousness has been shown in view of the combination of prior art it is not seen how the claims at issue patentably define thereover. The rejection stands.

Paper Number 20040407, pg. 5.

(b) Appellants' Argument

Claim 30 includes the limitation of "a transmitter including at least one antenna array, said transmitter generating an electrical signal, said transmitter antenna array continuously generating a magnetic field based on said electrical signal, said magnetic field having an intensity and defining a boundary; and a receiver module including an antenna array responsive to said magnetic field in electrical communication with a single channel receiver and a measurement circuit for determining a total power of said magnetic field incident at said antenna array, said receiver antenna array includes a two-axis, single output magnetic field sensing antenna producing a single magnetic field transduction signal output." Appellants respectfully submit that the claim is allowable because not every element and limitation of the claim is disclosed in the prior art references, as required by the third element of a *prima facie* case of obviousness.

1) The Avenel Reference is not applicable against Claim 30

The Examiner states that "Avenel et al teach the use of three perpendicular coils." However, Claim 28 does not include any limitation identifying the number of coils in any antenna array. The Examiner responds by stating: "Applicant's preamble in both Claims 28 and 30 recite that the boundary detection is independent of orientation. A thee axis antenna system is required to meet such an environment. Avenel et al provide such a system." Paper Number 20040407, pg. 5. The Examiner has not provided any support for the assertion that a three-axis antenna system is required or is inherent.

Applicants' Specification discloses that the receiver module "uses a novel single-output, two axis sensing antenna with orientation-independent response for detecting the total power in a 3-axis magnetic field signal." Paper Number 1, pg. 4, lines 18-21. Accordingly, Applicants' Specification refutes the Examiner's assertion that a three-axis antenna array is required for orientation independent detection. It is not clear if the Examiner means that the transmitting array must be a three-axis array because the Examiner has not so stated. Regardless of which antenna array the Examiner is referring to, Claim 30 does not include a limitation identifying the number of coils. The Examiner may not import limitations into a claim in order to apply a reference to

reject the claim. *See, e.g., Hoganas AB v. Dresser Indus., Inc.*, 9 F.3d 948, 950, 28 U.S.P.Q.2d 1936, 1938 (Fed. Cir. 1993) ("It is improper for a court to add extraneous limitations to a claim, that is limitations added wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim." (citation omitted)). "The danger of improperly importing a limitation is even greater when the purported limitation is based upon a term not appearing in the claim." *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313 (Fed. Cir. 2003). Accordingly, Avenal is not a proper reference against Claim 28.

On the basis of the Declaration filed with the Response on January 26, 2004, and Applicants' argument in the Response to the second Non-Final Office Action filed on January 26, 2004, the Examiner stated that Stewart, by itself, was not a valid reference and withdrew the rejection to this claim based on Stewart. *See* Paper Nos. 13 and 17. However, the Examiner then rejected this claim over Stewart in view of Avenel as described above.

Because the Examiner cites only Avenel to support a new rejection against Claim 28 and Avenel is not applicable to Claim 28, Appellants respectfully submit that the Examiner has not provided or presented any reason to reject Claim 28. Further, Appellants respectfully submit that the Examiner has not shown that all the elements and limitations of Claim 28 are included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness. Accordingly, Appellants respectfully request that the rejection to Claim 28 be withdrawn.

2) The references do not disclose a two-axis, single output magnetic field sensing antenna

Notwithstanding the above, Appellants respectfully submit that the Examiner has not shown a *prima facie* case of obviousness due to another error of the Examiner. The Examiner has not shown that every element and limitation in the claim is included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness.

Claim 30 includes the limitation that the "receiver antenna array includes a two-axis, single output magnetic field sensing antenna producing a single magnetic field transduction signal output." Stewart discloses a tag, or receiver, **25** having three

orthogonal coils **53**, **54**, **55** connected together. Stewart, Col. 4, lines 50-57; Col. 5, lines 1-3; Fig. 4, 6. Stewart does not disclose a receiver antenna array with two coils. Neither does Avenel disclose a receiver with two coils. Avenel discloses that three coils of one device (transmitter or receiver) work in conjunction with the single coil (loop) of the other device. *See* Avenel, Col. 1, line 65, to Col. 2, line 6; Col. 3, lines 35-39.

Because neither Stewart nor Avenel disclose a receiver with two coils as claimed in Claim 30, Appellants respectfully submit that the Examiner has not shown that all the elements and limitations of Claim 30 are included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness. Accordingly, Appellants respectfully request that the rejection to Claim 30 be withdrawn on these additional grounds.

3) The references do not disclose total power

Notwithstanding the above, Appellants respectfully submit that the Examiner has not shown a *prima facie* case of obviousness due to another error of the Examiner. The Examiner has not shown that every element and limitation in the claim is included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness.

Claim 30 includes the limitation that a measurement circuit determines "a total power of said magnetic field incident at said antenna array." Applicants' Specification describes the total power measure **381** as being representative of the total magnetic field signal power incident on the receiver **11**. *Paper No. 1*, pg. 36, lines 19-27; at 40, line 12, to 41, line 2; Figs. 10a, 10c. The Specification also states that the boundary is "defined by the locus of all points on a path surrounding the transmitter 10 for which the total power in the composite magnetic field is a constant." *Paper No. 1*, pg. 22, lines 20-22; Fig. 1. Therefore, total power is dependent upon a composite magnetic field. As stated above with respect to Claim 4, Stewart discloses a rotating magnetic field, which is different than a composite magnetic field, and Avenel does not overcome that deficiency. Accordingly, the cited references do not disclose or teach measuring the total power.

Because neither Stewart nor Avenel disclose total power or a composite magnetic field, Appellants respectfully submit that the Examiner has not shown that

all the elements and limitations of Claim 30 are included in one or more prior art references, as is required for the third element of a *prima facie* case of obviousness. Accordingly, Appellants respectfully request that the rejection to Claim 30 be withdrawn on these additional grounds.

B. Whether the Examiner's unsupported statements of obviousness based on common knowledge and opinion are sufficient to reject the claims as obvious.

In his several Office Actions, the Examiner repeatedly made assertions of obviousness without providing supporting evidence or citing references to support his assertions. Because the record does not support the Examiner's assertions, the rejections under 35 U.S.C. § 103(a) cannot stand.

(a) The Standard for Using Common Knowledge to Support a Rejection

The standard of review applied to findings of fact is the "substantial evidence" standard under the Administrative Procedure Act (APA). MPEP 2144.03, 8th ed, rev. 2; *See, also, In re Gartside*, 203 F.3d 1305, 1315, 53 U.S.P.Q.2d 1769, 1775 (Fed. Cir. 2000). The use of facts outside of the record before the United States Patent and Trademark Office to support a rejection is acceptable provided that certain criteria are met. Section 2144.03 of the Manual of Patent Examining Procedure states:

> The rationale supporting an obviousness rejection may be based on common knowledge in the art or "well-known" prior art. The examiner may take official notice of facts outside the records which are capable of instant and unquestionable demonstration as being "well-known" in the art.
>
> * * *
>
> It is never appropriate to rely solely on "common knowledge" in the art without evidentiary support in the record, as the principal evidence upon which a rejection was based. *Zurko*, 258 F.3d at 1385, 59 U.S.P.Q.2d at 1697 ("[T]he Board cannot simply reach conclusions based on its own understanding or experience—or on its assessment of what would be basic knowledge or common sense. Rather, the Board must point to some concrete evidence in the record in support of these findings.").

MPEP § 2144.03, pp. 2100-136 to 137, (emphasis added). The MPEP further states: "If applicant adequately traverses the examiner's assertion of official notice, the examiner must provide documentary evidence in the next Office action if the rejection

is to be maintained." MPEP § 2144.03, pg. 2100-138. This requirement recognizes that if the applicant provides evidence contradicting the examiner's assertions, then the facts outside the record cannot be "capable of instant and unquestionable demonstration as being 'well known' in the art."

2. The Law Regarding Supporting Obvious Determinations

(a) Determination of obviousness

It has long been held that in order to support a determination of obviousness under 35 U.S.C. § 103(a), that a suggestion or teaching must come from the prior art. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 U.S.P.Q. 459, 467 (1966); s*ee, e.g., C.R. Bard Inc. v. M3 Systems Inc.*, 157 F.3d 1340, 48 U.S.P.Q.2d 1225 (Fed. Cir. 1998); *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051-52, 5 U.S.P.Q.2d 1434, 1438 (Fed. Cir. 1988) (it is impermissible to reconstruct the claimed invention from selected pieces of prior art absent some suggestion, teaching, or motivation in the prior art to do so); *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985) (it is insufficient to select from the prior art the separate components of the inventor's combination, using the blueprint supplied by the inventor); Fro*msom v. Advance Offset Plate, Inc.*; 755 F.2d 1549, 1556, 225 U.S.P.Q. 26, 31 (Fed. Cir. 1985) (the prior art must suggest to one of ordinary skill in the art the desirability of the claimed combination). *See, also, Heidelberger Druckmaschinen AG v. Hantscho Commercial Prods., Inc.*, 21 F.3d 1068, 1072, 20 U.S.P.Q.2d 1377, 1379 (Fed. Cir. 1993) ("When the patented invention is made by combining known components to achieve a new system, the prior art must provide a suggestion or motivation to make such a combination."); *Northern Telecom, Inc. v. Datapoint Corp.*, 908 F.2d 931, 934, 15 U.S.P.Q.2d 1321, 1323 (Fed. Cir. 1990) (it is insufficient that prior art shows similar components, unless it also contains some teaching, suggestion, or incentive for arriving at the claimed structure).

The scope of the prior art includes art that is "reasonably pertinent to the particular problem with which the invention was involved." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 234 F.3d 654 (Fed. Cir. 2000) (citing *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1535, 218 USPQ 871, 876 (Fed. Cir. 1983)). In order to prevent a hindsight-based obviousness analysis, the courts have "clearly established that the

relevant inquiry for determining the scope and content of the prior art is whether there is a reason, suggestion, or motivation in the prior art or elsewhere that would have led one of ordinary skill in the art to combine the references." *Id.*; *see, e.g., In re Rouffet*, 149 F.3d 1350, 1359, 47 U.S.P.Q.2d 1453, 1459 (Fed. Cir. 1998) ("[T]he Board must identify specifically . . . the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."); *In re Dembiczak*, 175 F.3d at 999, 50 USPQ2d at 1617 ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.").

"It is insufficient to establish obviousness that the separate elements of the invention existed in the prior art, absent some teaching or suggestion, in the prior art, to combine the elements." *Arkie Lures, Inc. v. Gene Larew Tackle, Inc.*, 119 F.3d 953, 957, 43 USPQ2d 1294, 1297 (Fed. Cir. 1997). The test is not whether one device can be an appropriate substitute for another. *See Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1383, 231 U.S.P.Q. 81, 93 (Fed. Cir. 1986) ("Focusing on the obviousness of substitutions and differences instead of on the invention as a whole, as the district court did in frequently describing the claimed invention as the mere substitution of monoclonal for polyclonal antibodies in a sandwich assay, was a legally improper way to simplify the difficult determination of obviousness."). While the references need not expressly teach that the disclosure contained therein should be combined with another, *see Motorola, Inc. v. Interdigital Tech. Corp.*, 121 F.3d 1461, 1472, 43 U.S.P.Q.2d 1481, 1489 (Fed. Cir. 1997), the showing of combinability must be "clear and particular." *In re Dembiczak*, 175 F.3d at 999, 50 USPQ2d at 1617. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 234 F.3d 654 (Fed. Cir. 2000).

(b) The level of skill of one of ordinary skill in the art

The Federal Circuit has discussed the level of skill of one of ordinary skill in the art with respect to supporting a finding of motivation to combine references. The Court stated:

> This court has identified three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. In this case,

the Board relied upon none of these. Rather, just as it relied on the high level of skill in the art to overcome the differences between the claimed invention and the selected elements in the references, it relied upon the high level of skill in the art to provide the necessary motivation. The Board did not, however, explain what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination. Instead, the Board merely invoked the high level of skill in the field of art. If such a rote invocation could suffice to supply a motivation to combine, the more sophisticated scientific fields would rarely, if ever, experience a patentable technical advance. Instead, in complex scientific fields, the Board could routinely identify the prior art elements in an application, invoke the lofty level of skill, and rest its case for rejection. To counter this potential weakness in the obviousness construct, the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness.

* * *

. . . In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.

In re Rouffet, 149 F.3d 1350, 47 U.S.P.Q.2d 1453, 1458-59 (Fed. Cir. 1998) (emphasis added).

3. Claims 4-13, 16-23 and 23-30

With respect to Claims 4-13, 16-23 and 23-30, the Examiner made an omnibus rejection including an assertion regarding the level of ordinary skill and what would be obvious.

(a) Grouping of Claims

The Examiner made an omnibus rejection of Claims 4-13, 16-23 and 23-30 by not specifically addressing the limitations unique to each claim. In support of the rejection of these claims, the Examiner relied upon an argument of obviousness. Accordingly, Claims 4-13, 16-23 and 23-30 are believed to stand or fall together with respect to this issue regarding the adequacy of the Examiner's obviousness assertions.

(b) Examiner's Assertions

In the second Final Office Action, the Examiner makes the following statements regarding obviousness:

2. Regarding Claims 4-13, 16-23 and 23-30, Stewart et al show . . .

> . . . Avenel et al are cited as resolving the level of ordinary skill in the antenna art and teach the use of three perpendicular coils **1**, **2**, and **3** having and disposed along respective axes. Avenel et al teach that the emitter (i.e., transmitter) may employ these three loop coils. Thus, it would have been obvious to the skilled artisan to employ such and antenna arrangement in lieu of the two axes/loop coils 32,33 of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined.

Paper Number 20040407, pg. 2-3.

(c) Appellants' Argument

First, Appellants' Application is related to the art of proximity monitoring. More particularly, the Specification states:

> The invention relates to a method and apparatus for generating and sensing an electromagnetic field defining a wireless boundary. More specifically, this invention relates to a method and apparatus for determining the proximity of a receiver to an electromagnetic field boundary generated by a wireless transmitter, especially for animal containment.

Paper No. 1, pg. 1, lines 16-20.

Stewart discloses a device in the art of proximity monitors. Stewart, Col. 1, lines 10-14 ("FIELD OF THE INVENTION: The present invention relates to the field of location determining, and, more particularly, to proximity detection of a person or object carrying a tag.").

Avenel discloses low-frequency communication by magnetic coupling between a vehicle and an identification member, "thus allowing identification between said member and the vehicle and hence, thereafter, the exploitation of any desired control signal such as the unlocking of the doors or the switching on of the headlights or else the remote starting of the engine, when it is necessary to heat it in advance as is the case in cold countries." Avenel, Col. 1, lines 5-16. Avenel discloses a set of three coils **1**, **2**, **3** for its communication device. Avenel, Col. 1, lines 35-44, Fig. 2.

In his omnibus rejection, the Examiner makes the assertion that "Avenel [is cited] as resolving the level of ordinary skill in the antenna art". Paper Number 20040407, pg. 2. The Examiner then asserts, without further clarification, that "it

would have been obvious to the skilled artisan to employ such and [sic] antenna arrangement in lieu of the two axes/loop coils **32**, **33** of Stewart et al in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined." Paper Number 20040407, pg. 2-3. The Examiner did not provide any explanation as to why one of ordinary skill in the art would be so motivated. Also, Appellants respectfully point out that the test for obviousness applies to "one of ordinary skill in the art," and not a "skilled artisan" as asserted by the Examiner.

Appellants respectfully submit that the Examiner has not explained "the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious." *In re Rouffet*, 47 U.S.P.Q.2d at 1459. First, the art of one of ordinary skill in the art of the communications device disclosed by Avenel is not the same art as one of ordinary skill in the art of the proximity monitoring device disclosed by Stewart. Second, the antennas **32**, **33** disclosed by Stewart produce a rotating magnetic field, Stewart, Col. 3, lines 62-65, Fig. 3, as opposed to the omnidirectional magnetic field produced by the three coils **1**, **2**, **3** disclosed by Avenel, Avenel, Col. 1, lines 40-47. The Examiner has not explained why a set of coils **32**, **33** producing a rotating magnetic field, which is a magnetic field produced by a set of coils each having an axis within a plane, *see* Declaration, para. 14, can be replaced by a set of three coils **1**, **2**, **3** arranged such as to produce a different type of magnetic field than a rotating field.

The Examiner justifies his conclusion of obviousness by stating that such a modification of Stewart in view of Avenel would be done "in order to provide an omnidirectional antenna radiation pattern, where three distinct planes are defined." Appellants respectfully submit that the motivation provided by the Examiner does not exist in the references and that the references are unrelated such that the reason given is of the Examiner's imagination. Notwithstanding that the Examiner has the burden of establishing a *prima facie* case of obviousness, Appellants offer the following as illustrations of why the Examiner's conclusory assertion of obviousness is not supported the record.

Appellants point out that Stewart does not discuss the need for an omnidirectional antenna. In fact, Stewart states, in describing the objects, features,

and advantages of the invention disclosed in Stewart, that the "proximity detection system compris[es] a magnetic field generator for generating a rotating magnetic field." Stewart, Col. 1, lines 53-56. One of ordinary skill in the art of proximity monitoring systems knows that such a rotating magnetic field cannot be constructed with an omnidirectional antenna because a rotating magnetic field operates in a plane defined by two orthogonal axes, *see* Declaration, para. 14, and cannot rotate with three orthogonal axes.

Stewart discloses a transmitter with two orthogonal coils **32**, **33** for generating a rotating magnetic field. Stewart, Col. 4, lines 7-11. It is important to note that a person of ordinary skill in the art would recognize that a rotating magnetic field is a magnetic field that rotates about an axis. The ordinary meaning of the term "rotate" is to turn or spin on an axis. Therefore, a rotating magnetic field is a magnetic field that turns or spins on an axis. One skilled in the art recognizes that a rotating magnetic field can be generated by any number of coils provided that the axis of each coil lies in a plane and each coil is out of phase with its adjacent coil by the same number of degrees as its radial separation. The axis of rotation of the rotating magnetic field is normal (perpendicular) to the plane. *See* Declaration, para. 14.

For a rotating magnetic field generator with two coils, such as disclosed by Stewart, adding a third coil with an axis orthogonal to each axis of the other coils destroys the functionality of the rotating magnetic field generator. This is because the third coil projects a magnetic field that does not share the axis of rotation of the other two coils.

It is noted that Avenel does not disclose that its three-coil system **1**, **2**, **3** generates a rotating magnetic field. Avenel does disclose that an "omnidirectional magnetic field is generated by supplying the three coils with currents which are out of phase by about 60° or 120°." Avenel, Col. 1, lines 45-47. Avenel's omnidirectional magnetic field is a complex magnetic field that varies in three dimensions, but it is not a rotating magnetic field as disclosed in Stewart.

Because the rotating magnetic field generator disclosed by Stewart would have its function changed by the addition of a third coil as disclosed by Avenel, there is no "suggestion or motivation, either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings" as required by the first element of a *prima facie* case of obviousness. MPEP § 2143. Therefore, the first element of a *prima facie* case of obviousness has not been shown by the Examiner.

(d) Conclusion

Appellants respectfully submit that the Examiner has not provided reasons supported by the record explaining the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. Accordingly, the Examiner's statements of obviousness based on common knowledge and unsupported assertions are not sufficient to reject Claims 4-13, 16-23 and 23-30 as obvious.

4. Examiner's Assertions regarding the Processor for Claims 4-13, 16-23 and 23-30

With respect to Claims 4-13, 16-23 and 23-30, the Examiner made an omnibus rejection including an assertion regarding obviousness of the measurement circuit and the processor.

(a) Grouping of Claims

The Examiner made an omnibus rejection of Claims 4-13, 16-23 and 23-30 by not specifically addressing the limitations unique to each claim. In support of the rejection of these claims, the Examiner relied upon an argument of obviousness. Accordingly, Claims 4-13, 16-23 and 23-30 are believed to stand or fall together with respect to this issue regarding the adequacy of the Examiner's obviousness assertions.

(b) Examiner's Assertions

In the second Final Office Action, the Examiner makes the following statements regarding obviousness:

> 2. Regarding Claims 4-13, 16-23 and 23-30, Stewart et al show . . .
>
> * * *
>
> Also, Stewart et al do not specifically call the processor **61** a "measurement circuit", but in column 5, lines 30-53 suggest to the skilled artisan that the

processor performs a number of different functions. It would have been obvious to the skilled artisan that the processor must determine the total power or signal strength at the antennas **53-55**. The three antennas are oriented in three distinct and different axes, and thus the total power is connected to a common node connected to the detector **56** connected to the demodulator **60** and connected to the processor **61**. Stewart et al discuss the intensity threshold indicative that the receiver tag **25** is proximate the base station **21** within the perimeter **24**. One skilled in the art recognizes as obvious that there is a measurement circuit implied in the circuitry since there is a preset threshold power level employed in the system. A skilled artisan would find it obvious that the threshold power level is achieved by measurement of the total power incident at the antenna array. The acknowledgement detection function (col. 5, lines 51-54) cannot be performed without the total power incident on the antenna array being measured.

Paper Number 20040407, pg. 2-3, (emphasis added).

(c) Appellants' Argument

Initially, Appellants respectfully point out that the test for obviousness applies to "one of ordinary skill in the art," and not a "skilled artisan" as asserted by the Examiner.

Appellants admit that processors can be programmed to perform a number of functions. However, the test is not whether a processor can be programmed to perform a function. Further, Appellants point out that the Examiner asserts that it is obvious to determine the signal strength at the antennas **53-55**; however, the term signal strength does not appear in any of the claims. The phrase total power does appear in some of the claims, and total power is defined in the Specification as a function of the composite time-varying magnetic field **12** emitted by the 3-axis antenna array **13**. *Paper No. 1*, pg. 19, lines 30-32; pg. 32, lines 1-9; pg. 35, lines 8-13; Figs. 1, 2, 10a, 10c. The Examiner apparently equates total power with signal strength, which is not what the Specification teaches. *Id.*

The Examiner then describes the tag, or receiver, **25** of Stewart, which has three antennas **53-55** connected together to receive a rotating magnetic field. Paper Number 20040407, pg. 2-3. The demodulator **60** determines "at least one of the direction and speed of the rotating magnetic field." Stewart, Col. 4, lines 59-60. The circuit disclosed by Stewart and described by the Examiner is one that requires the use of a rotating magnetic field and is sensitive to the signal strength emitted by the

transmitter, or base station, **21**. Stewart, Col. 5, lines 9-20. The Examiner then asserts "One skilled in the art recognizes as obvious that there is a measurement circuit implied in the circuitry since there is a preset threshold power level employed in the system. A skilled artisan would find it obvious that the threshold power level is achieved by measurement of the total power incident at the antenna array." Paper Number 20040407, pg. 3. This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. Applicants have requested the Examiner to provide support for his official notice of obviousness, in accordance with MPEP Section 2144.03. The Examiner has not provided any support for his assertions.

Also, the Examiner asserts that the "acknowledgement detection function (col. 5, lines 51-54) cannot be performed without the total power incident on the antenna array being measured." *Id.* However, the cited portion of Stewart states: "In slightly different terms, in this embodiment an acknowledgment function is provided where if the magnetic field is detected, a signal is transmitted to acknowledge the detection." Stewart, Col. 5, lines 51-54. This portion of Stewart does not discuss total power and does not support the Examiner's assertion. In fact, read in context, the acknowledgement function of Stewart involves the tag **25** detecting the magnetic field and the tag **25** transmitting an RF signal to the base station **21** by a transmitter **62** in the tag **25**. Stewart, Col. 5, lines 40-51. That is, if the signal strength of the magnetic field from the base station **21** falls below a threshold, the tag **25** stops sending an RF signal to the base station **21**. *Id.*

Lastly, the Applicants rebutted the Examiner's obviousness rejection with a Declaration submitted in response to the second Non-Final Office Action. The Examiner accepted this evidence and withdrew his rejection to all the claims, including Claims 4-13, 16-23 and 23-30.

(d) Conclusion

Appellants respectfully submit that the Examiner has not provided reasons supported by the record explaining the reasons one of ordinary skill in the art would

have been motivated to select the references and to combine them to render the claimed invention obvious. Accordingly, the Examiner's statements of obviousness based on common knowledge and unsupported assertions are not sufficient to reject Claims 4-13, 16-23 and 23-30 as obvious.

5. Claims 4-6 and 12-14

With respect to Claims 4-6 and 12-14, the Examiner made an omnibus rejection including an assertion regarding obviousness of the number of antennas.

(a) Grouping of Claims

The Examiner made an omnibus rejection of Claims 4-6 and 12-14 by not specifically addressing the limitations unique to each claim. In support of the rejection of these claims, the Examiner relied upon an argument of obviousness. Accordingly, these claims are believed to stand or fall together with respect to this issue regarding the adequacy of the Examiner's obviousness assertions.

(b) Examiner's Assertions

In the second Final Office Action, the Examiner makes the following statements regarding obviousness:

> In a typical voting antenna system, power or signal strength at each antenna is measured and selected. Total power of the antennas is measured relative to other antenna elements and thus the proper antenna is employed in the respective plane. Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken.

Paper Number 20040407, pg. 2-3, (emphasis added).

(c) Appellants' Argument

Initially, Appellants respectfully point out that the test for obviousness applies to "one of ordinary skill in the art," and not a "skilled artisan" as asserted by the Examiner.

In his omnibus rejection the Examiner states: "Regarding Claims 4-6, 12-14, it would have been obvious to the skilled artisan to employ three transmitting antennas and/or two receiver antennas, and notice of such use is hereby taken." This assertion

has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. Applicants have requested the Examiner to provide support for his official notice of obviousness, in accordance with MPEP Section 2144.03. However, the Examiner has not provided any support for his assertions.

Further, the 37 C.F.R. § 1.132 Declaration of James Rochelle directly addressed the Examiner's assertion of obviousness. *See* Declaration, para. 12-17. In particular, the Declaration sets forth facts supporting the Declarant's opinion that "connecting three antennas to a transmitter was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application Serial Number 09/779,076." Declaration, para. 17.

(d) Conclusion

Appellants respectfully submit that the Examiner has not provided reasons supported by the record explaining the basis for the Examiner taking official notice of obviousness. Accordingly, the Examiner's statements of official notice of obviousness are not sufficient to reject Claims 4-6 and 12-14 as obvious.

6. Claims 7 and 28

With respect to Claims 7 and 28, the Examiner made an omnibus rejection including an assertion regarding obviousness of the method of defining the carrier frequency.

(a) Grouping of Claims

The Examiner made an omnibus rejection of Claims 7 and 28 by not specifically addressing the limitations unique to each claim. In support of the rejection of these claims, the Examiner relied upon an argument of obviousness. Accordingly, these claims are believed to stand or fall together with respect to this issue regarding the adequacy of the Examiner's obviousness assertions.

(b) Examiner's Assertions

In the second Final Office Action, the Examiner makes the following statements regarding obviousness:

> As to Claims 7 and 28, the line frequency multiple defining the carrier frequency is an obvious method used in transmitters.

Paper Number 20040407, pg. 3-4.

(c) Appellants' Argument

In his omnibus rejection the Examiner states: "the line frequency multiple defining the carrier frequency is an obvious method used in transmitters." This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action; Paper Number 20040407. Applicants have requested the Examiner to provide support for his official notice of obviousness, in accordance with MPEP Section 2144.03. However, the Examiner has not provided any support for his assertions.

Further, the 37 C.F.R. § 1.132 Declaration of James Rochelle directly addressed the Examiner's assertion of obviousness. *See* Declaration, para. 24-27. In particular, the Declaration sets forth facts supporting the Declarant's opinion that " using multiples of the power line frequency to define the carrier frequency was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application Serial Number 09/779,076." Declaration, para. 27.

(d) Conclusion

Appellants respectfully submit that the Examiner has not provided reasons supported by the record explaining the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. Accordingly, the Examiner's statements of obviousness based on common knowledge and unsupported assertions are not sufficient to reject Claims 7 and 28 as obvious.

7. Claims 8 and 16-23

With respect to Claims 8 and 16-23, the Examiner made an omnibus rejection including an assertion regarding obviousness of the components used in the receiver.

(a) Grouping of Claims

The Examiner made an omnibus rejection of Claims 8 and 16-23 by not specifically addressing the limitations unique to each claim. In support of the rejection of these claims, the Examiner relied upon an argument of obviousness. Accordingly, these claims are believed to stand or fall together with respect to this issue regarding the adequacy of the Examiner's obviousness assertions.

(b) Examiner's Assertions

In the second Final Office Action, the Examiner makes the following statements regarding obviousness:

> As to Claims 8 and 16-23, the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan.

Paper Number 20040407, pg. 4.

(c) Appellants' Argument

Initially, Appellants respectfully point out that the test for obviousness applies to "one of ordinary skill in the art," and not a "skilled artisan" as asserted by the Examiner.

In his omnibus rejection the Examiner states that "the oscillator and PLL and amplifiers, etc., are all obvious transmitter components in the Stewart et al system, and would therefore be obvious to employ therein, by the skilled artisan." This assertion has been repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. Applicants have requested the Examiner to provide support for his official notice of obviousness, in accordance with MPEP Section 2144.03. However, the Examiner has not provided any support for his assertions.

Further, the 37 C.F.R. § 1.132 Declaration of James Rochelle directly addressed the Examiner's assertion of obviousness. *See* Declaration, para. 28-32. In particular, the Declaration sets forth facts supporting the Declarant's opinion that "utilizing the oscillator and PLL and amplifiers, etc., in a receiver was not obvious to one skilled in the art of wireless containment and proximity monitoring systems at the time of filing of the Application Serial Number 09/779,076." Declaration, para. 32.

(d) Conclusion

Appellants respectfully submit that the Examiner has not provided reasons supported by the record explaining the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. Accordingly, the Examiner's statements of obviousness based on common knowledge and unsupported assertions are not sufficient to reject Claims 8 and 16-23 as obvious.

8. Claims 9-11

With respect to Claims 9-11, the Examiner made an omnibus rejection including an assertion regarding obviousness of the modulation technique.

(a) Grouping of Claims

The Examiner made an omnibus rejection of Claims 9-11 by not specifically addressing the limitations unique to each claim. In support of the rejection of these claims, the Examiner relied upon an argument of obviousness. Accordingly, these claims are believed to stand or fall together with respect to this issue regarding the adequacy of the Examiner's obviousness assertions.

(b) Examiner's Assertions

In the second Final Office Action, the Examiner makes the following statements regarding obviousness:

> As to Claims 9-11, the particular modulation technique, in such a communication system, is also obvious to the skilled artisan.

Paper Number 20040407, pg. 4, (emphasis added).

(c) Appellants' Argument

Initially, Appellants respectfully point out that the test for obviousness applies to "one of ordinary skill in the art," and not a "skilled artisan" as asserted by the Examiner.

In his omnibus rejection the Examiner states that "the particular modulation technique, in such a communication system, is also obvious to the skilled artisan." This assertion has been substantially repeated by the Examiner in the first Non-Final Office Action, Paper Number 9, the first Final Office Action, Paper Number 13, the second Non-Final Office Action, Paper Number 17, and the second Final Office Action, Paper Number 20040407. Applicants have requested the Examiner to provide support for his official notice of obviousness, in accordance with MPEP Section 2144.03. However, the Examiner has not provided any support for his assertions.

Further, the 37 C.F.R. § 1.132 Declaration of James Rochelle directly addressed the Examiner's assertion of obviousness with respect to a limitation common to the claims. *See* Declaration, para. 33-40. In particular, the Declaration sets forth facts supporting the Declarant's opinion that "one skilled in the art of proximity monitoring systems would not consider the use of binary phase shift keying as an obvious modulation technique." Declaration, para. 40.

(d) Conclusion

Appellants respectfully submit that the Examiner has not provided reasons supported by the record explaining the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. Accordingly, the Examiner's statements of obviousness based on common knowledge and unsupported assertions are not sufficient to reject Claims 9-11 as obvious.

9. Examiner's Response to Applicants' Arguments

The Examiner responded to Applicants arguments submitted in the Applicants Response to the second Non-Final Office Action. The Examiner makes assertions without specifically identifying the claims to which they apply.

(a) Grouping of Claims

The Examiner attempted to rebut Applicants' arguments by making assertions of obviousness. Appellants are unable to ascertain to which claims the assertions specifically apply.

(b) Examiner's Assertions

In the second Final Office Action, the Examiner makes the following statements in response to Applicants' arguments:

> 3. Applicant's arguments filed 26 January 2004 have been fully considered but they are not persuasive. Specifically, regarding applicant's remarks to the procedural status, the rejection based upon Stewart alone was withdrawn based upon applicant's affidavit. It still qualifies as a reference when combined with another to establish the level of ordinary skill and evidence of obviousness according to Graham v. Deere.
>
> The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
>
> 1. Determining the scope and contents of the prior art.
> 2. Ascertaining the differences between the prior art and the claims at issue.
> 3. Resolving the level of ordinary skill in the pertinent art.
> 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
>
> Regarding the remarks to the obviousness, the motivation to combine is to allow a three dimensional and omnidirectional antenna system to be defined when employing the antenna of Avenel et al. Mere substitution of antennas is obvious for providing specific pattern control. Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results. Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system.

Paper Number 20040407, pg. 4-5, (emphasis added).

(c) Appellants' Argument

1) Substitution of Antennas

Initially, the Examiner asserts "Mere substitution of antennas is obvious for providing specific pattern control." Paper Number 20040407, pg. 4. However,

obviousness is not based on "whether one device can be an appropriate substitute for another." *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 234 F.3d 654 (Fed. Cir. 2000); *see Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1383, 231 U.S.P.Q. 81, 93 (Fed. Cir. 1986) ("Focusing on the obviousness of substitutions and differences instead of on the invention as a whole, as the district court did in frequently describing the claimed invention as the mere substitution of monoclonal for polyclonal antibodies in a sandwich assay, was a legally improper way to simplify the difficult determination of obviousness.").

The Examiner has not provided any support for his statement and the number of patents on antennas and their various arrangements seems to contradict the Examiner's assertion obvious.[1] Further, Stewart discloses, in the Background of the Invention section, that pattern control is a known problem. Stewart, Col. 1, lines 15-46. Whether the Examiner is referring to radial distance or shape of the pattern is not clear from the Examiner's statement. However, Stewart discloses problems with the size of the pattern, Stewart, Col. 1, lines 23-25 and lines 32-36, and with the geometry of the pattern, Stewart, Col. 1, lines 37-46. Stewart discloses a solution to these problems, including pattern control of differing geometry. Stewart, Col. 4, lines 20-25.

Further, Appellants note that the Examiner refers to pattern control, although such words do not appear in any of the pending claims. As such, it appears that this statement is a non sequitor and does not apply to any of the claims.

Accordingly, the Examiner's assertion of obviousness, without support in the record, does not provide the basis for a rejection of any claim.

2) Modulation Schemes

The Examiner also asserts "Specific modulation schemes are always obvious to employ by the skilled artisan absent any specific unexpected results." Paper Number 20040407, pg. 4. The Examiner has not provided any reason or support in the record for this assertion.

Further, the 37 C.F.R. § 1.132 Declaration of James Rochelle directly addressed the Examiner's assertion of obviousness of one type of modulation. *See* Declaration, para. 33-40. In particular, the Declaration sets forth facts supporting the Declarant's opinion that "one skilled in the art of proximity monitoring systems would not consider the use of binary phase shift keying as an obvious modulation technique." Declaration, para. 40.

Accordingly, the Examiner's assertion of obviousness, without support in the record, does not provide the basis for a rejection of any claim.

3) Signaling and the FCC

The Examiner also asserts "Signaling is accomplished based upon rules in the band of use set forth by the FCC and equipment available for use therein. Such a substitution is the case in this record where the band of use is selected according to licensing rules for the particular communication system." Paper Number 20040407, pg. 4-5. The Examiner has not provided any reason or support in the record for this assertion. Nor has the Examiner explained the significance of this statement. It is unclear to Appellants whether these statements apply to the modulation or the generation of the magnetic field or to some other aspect of the claims because the Examiner has not tied these statements to any specific claims nor do the statements appear to apply to any pending claim.

Further, neither the Specification nor the claims discuss FCC requirements or licensing. The Examiner has not shown that practice of the disclosed Invention requires an FCC license or is governed by FCC rules.

Accordingly, the ambiguity of the Examiner's assertion of obviousness, without support in the record, does not provide the basis for a rejection of any claim.

---

1 A search of the PTO Internet web site on August 16, 2004, for issued patents from 1976 to present returned 167 hits with the search terms spec/"pattern control" and spec/antenna.

(d) Conclusion

Appellants respectfully submit that the Examiner has not provided reasons supported by the record explaining the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. Accordingly, the Examiner's statements of obviousness based on common knowledge and unsupported assertions are not sufficient to reject any claims as obvious.

10. Claims 28 and 30

With respect to Claims 28 and 30, the Examiner made an omnibus rejection including an assertion regarding obviousness of the number of antennas for claims that do not include such a limitation.

(a) Grouping of Claims

The Examiner rejected Claims 28 and 30 by an assertion that the preamble requires a three-axis antenna system. In support of the rejection of these claims, the Examiner relied upon a bald assertion. Accordingly, these claims are believed to stand or fall together with respect to this issue regarding the adequacy of the Examiner's obviousness assertions.

(b) Examiner's Assertions

In the second Final Office Action, the Examiner makes the following statements regarding obviousness:

> Regarding applicant's arguments relative to the number of coils not recited in Claims 28 and 30, the preamble sets the stage for use of a system. Applicant's preamble in both Claims 28 and 30 recite that the boundary detection is independent of orientation. A thee axis antenna system is required to meet such an environment. Avenel et al provide such a system.

Paper Number 20040407, pg. 5, (emphasis added).

(c) Appellants' Argument

Notwithstanding that the Examiner is reading limitations into the claim, the Examiner asserts that a boundary detection system that operates independent of

orientation requires a three-axis antenna system. The Examiner does not provide any explanation or support for his bald assertion.

(d) Conclusion

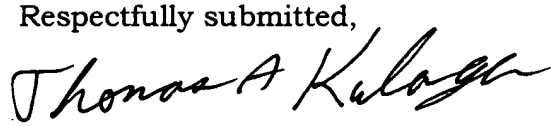
Appellants respectfully submit that the Examiner has not provided reasons supported by the record explaining the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious. Accordingly, the Examiner's statements of obviousness based on common knowledge and unsupported assertions are not sufficient to reject Claims 28 and 30 as obvious.

X. Conclusion

Appellants respectfully requests that the Board overturn the rejection of Claims 4-13, 16-23, and 28-30 under 35 U.S.C. § 103(a) as being unpatentable over Stewart in view of Avenel and remand the Application to the Examiner with instructions to issue a Notice of Allowance.

Please charge any additional fees associated with this communication, or credit any overpayment, to Deposit Account No. 16-1910 (26053.00).

Respectfully submitted,



Thomas A. Kulaga
Registration No. 46,844

Pitts & Brittian, P.C.
P.O. Box 51295
Knoxville, Tennessee 37950-1295
(865) 584-0105 Voice
(865) 584-0104 Fax
tkulaga@pitts-brittian.com

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial Number:	09/779,076
Filing Date:	02/07/2001
Confirmation:	7830
Applicant:	James M. Rochelle, et al.
Title:	Wireless Pet Containment System
Docket Number:	26053.00
Examiner:	Michael C. Wimer
Art Unit:	2821
Customer Number:	22465
Express Mail Number:	EV

APPELLANT'S BRIEF
APPENDIX A

The following listing includes all the claims presently before the Patent and Trademark Office.

Claim 1 (Cancelled):

Claim 2 (Cancelled):

Claim 3 (Cancelled):

Claim 4 (previously presented): The proximity monitoring system of Claim 29 wherein said magnetic field is a composite magnetic field summing a first magnetic field component from said first transmitter antenna, a second magnetic field component from said second transmitter antenna, and a third magnetic field component from said third transmitter antenna.

Claim 5 (original): The proximity monitoring system of Claim 4 wherein each of said first magnetic field component, said second magnetic field component, and said third magnetic field component is continuously transmitted using a single carrier frequency.

Claim 6 (original): The proximity monitoring system of Claim 5 wherein said single carrier frequency is uniquely modulated for each of said first magnetic field component, said second magnetic field component, and said third magnetic field component.

Claim 7 (original): The proximity monitoring system of Claim 5 wherein said single carrier frequency is a programmable integral multiple of a power supply line frequency.

Claim 8 (original): The proximity monitoring system of Claim 5 wherein said single carrier frequency is derived from a crystal oscillator using a phase locked loop.

Claim 9 (original): The proximity monitoring system of Claim 5 wherein said single carrier signal is modulated using a binary phase shift keying waveform.

Claim 10 (original): The proximity monitoring system of Claim 9 wherein a coherent said binary phase shift keying waveform is modulated using a waveform produced by integral ratio frequency division of a transmitter system clock.

Claim 11 (original): The proximity monitoring system of Claim 9 wherein said binary phase shift keying waveform is selected to produce a high degree of rejection of interference at a power line frequency and any significant harmonics of the power line frequency and to allow accurate decomposition of said composite magnetic

field into said first magnetic field component, said second magnetic field component, and said third magnetic field component.

Claim 12 (previously presented): The proximity monitoring system of Claim 29 wherein said first transmitter antenna, said second transmitter antenna, and said transmitter third antenna are constructed using antenna coils having substantially similar dimensions.

Claim 13 (previously presented): The proximity monitoring system of Claim 29 wherein one of said first transmitter antenna, said second transmitter antenna, and said transmitter third antenna is constructed from a pair of said antenna coils.

Claim 14 (Cancelled):

Claim 15 (Cancelled):

Claim 16 (previously presented): The proximity monitoring system of Claim 30 wherein said receiver is fabricated on a single integrated circuit including an input amplifier, an I and Q baseband converter, a phase locked loop, a crystal oscillator, a baseband pass filter, and an I and Q baseband amplifier.

Claim 17 (original): The proximity monitoring system of Claim 16 wherein said receiver further includes a baseband sigma delta modulator for producing an I and Q bit stream.

Claim 18 (original): The proximity monitoring system of Claim 17 wherein said receiver further includes a sigma delta converter digital filter for

sampling said I and Q bit stream down to a sampling frequency that is nominally equivalent to twice a power line frequency.

Claim 19 (original): The proximity monitoring system of Claim 16 wherein said I and Q baseband converter is a switching mixer.

Claim 20 (previously presented): The proximity monitoring system of Claim 16 wherein said receiver further includes an analog-to-digital converter in electrical communication with said I and Q baseband amplifier, said receiver module further comprising a digital signal processor in electrical communication with said analog-to-digital converter, said analog-to-digital converter producing an digital I and Q baseband signal from an output of said I and Q baseband amplifier.

Claim 21 (original): The proximity monitoring system of Claim 20 wherein said digital signal processor extracts each of said first magnetic field component, said second magnetic field component, and said third magnetic field component from said digital I and Q baseband signal.

Claim 22 (previously presented): The proximity monitoring system of Claim 2 wherein said receiver module is carried by a pet, said receiver module further comprising a stimulus delivery system for applying a deterrent stimulus to the pet when the pet approaches said boundary.

Claim 23 (original): The proximity monitoring system of Claim 16 wherein said receiver includes detection logic to detect an unusually rapid decrease in said total power of said magnetic field incident at said antenna array thereby indicating a loss of power to said transmitter.

Claim 24 (cancelled):

Claim 25 (cancelled):

Claim 26 (cancelled):

Claim 27 (cancelled):

Claim 28 (previously presented): A proximity monitoring system capable of accurate boundary detection that is substantially independent of orientation, said proximity monitoring system comprising:

a transmitter including at least one antenna array, said transmitter generating an electrical signal, said transmitter antenna array continuously generating a magnetic field based on said electrical signal, said magnetic field having an intensity and defining a boundary; and

a receiver module including an antenna array responsive to said magnetic field in electrical communication with a receiver, a measurement circuit for determining a total power of said magnetic field incident at said antenna array, and a digital signal processor for extracting components of said magnetic field and rejecting interference induced by a local power supply line frequency

Claim 29 (previously presented - formerly dependent claim 3): A proximity monitoring system capable of accurate boundary detection that is substantially independent of orientation, said proximity monitoring system comprising:

a transmitter including at least one antenna array, said transmitter generating an electrical signal, said transmitter antenna array continuously generating a

magnetic field based on said electrical signal, said magnetic field having an intensity and defining a boundary; said transmitter at least one antenna array includes a first transmitter antenna representing a first coordinate axis, a second transmitter antenna representing a second coordinate axis, and a third transmitter antenna representing a third coordinate axis; and

a receiver module including an antenna array responsive to said magnetic field in electrical communication with a single channel receiver and a measurement circuit for determining a total power of said magnetic field incident at said antenna array.

Claim 30 (previously presented - formerly dependent claim 14): A proximity monitoring system capable of accurate boundary detection that is substantially independent of orientation, said proximity monitoring system comprising:

a transmitter including at least one antenna array, said transmitter generating an electrical signal, said transmitter antenna array continuously generating a magnetic field based on said electrical signal, said magnetic field having an intensity and defining a boundary; and

a receiver module including an antenna array responsive to said magnetic field in electrical communication with a single channel receiver and a measurement circuit for determining a total power of said magnetic field incident at said antenna array, said receiver antenna array includes a two-axis, single output magnetic field sensing antenna producing a single magnetic field transduction signal output.